vCloud Director User's Guide

vCloud Director 1.5

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EN-000635-00

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vCloud Director User's Guide

The *VMware vCloud Director User's Guide* provides information about managing organizations, catalogs, vApps, and virtual machines.

Intended Audience

This book is intended for anyone who wants to set up and configure organizations in VMware vCloud Director. The information in this book is written for non-system administrators, including organization administrators who will create and set up vApps, catalogs, and virtual machines.

Getting Started with vCloud Director 1

When you log in to the vCloud Director Web console, the **Home** tab provides access to your resources and links to common tasks.

You can also set your user preferences and view the product help.

This chapter includes the following topics:

- "Understanding VMware vCloud Director," on page 9
- "Log In to the Web Console," on page 10
- "Using vCloud Director," on page 10
- "Set Mozilla Firefox Options," on page 11
- "Set Microsoft Internet Explorer Options," on page 12
- "Set User Preferences," on page 13
- "Change Your Password," on page 13

Understanding VMware vCloud Director

VMware® vCloud Director provides role-based access to a Web console that allows the members of an organization to interact with the organization's resources to create and work with vApps and virtual machines.

Before you can access your organization, a vCloud Director system administrator must create the organization, assign it resources, and provide the URL to access the Web console. Each organization includes one or more organization administrators, who finishes setting up the organization by adding members and setting policies and preferences. After the organization is set up, non-administrator users can log in to create, use, and manage virtual machines and vApps.

Organizations

An organization is a unit of administration for a collection of users, groups, and computing resources. Users authenticate at the organization level, supplying credentials established by an organization administrator when the user was created or imported. System administrators create and provision organizations, while organization administrators manage organization users, groups, and catalogs.

Users and Groups

An organization can contain an arbitrary number of users and groups. Users can be created locally by the organization administrator or imported from a directory service such as LDAP. Groups must be imported from the directory service. Permissions within an organization are controlled through the assignment of rights and roles to users and groups.

Virtual Datacenters

An organization virtual datacenter (vDC) provides resources to an organization. vDCs provide an environment where virtual systems can be stored, deployed, and operated. They also provide storage for virtual media, such as floppy disks and CD ROMs. An organization can have multiple vDCs.

Organization Networks

An organization network is contained within a vCloud Director organization and is available to all the vApps in the organization. An organization network allows vApps within an organization to communicate with each other. An organization network can be connected to an external network or isolated and internal to the organization. Only system administrators can create organization networks, but organization administrators can manage organization networks, including the network services they provide.

vApp Networks

A vApp network is contained within a vApp and allows virtual machines in the vApp to communicate with each other. You can connect a vApp network to an organization network to allow the vApp to communicate with other vApps in the organization and outside of the organization, if the organization network is connected to an external network.

Catalogs

Organizations use catalogs to store vApp templates and media files. The members of an organization that have access to a catalog can use the catalog's vApp templates and media files to create their own vApps. Organizations administrators can copy items from public catlogs to their organization catalog.

Log In to the Web Console

Use the organization URL to log in to your organization and access the Web console.

Contact your organization administrator if you do not know the organization URL.

Procedure

1 In a browser, type the URL of your organization and press Enter.

For example, type `https://cloud.example.com/cloud/org/myOrg`.

2 Type your user name and password and click **Login**. .

What to do next

The Web console displays a list of the common tasks and resources available to you based on your role. An organization administrator can click the **Set up this organization** link on the **Home** tab to finish setting up a newly created organization. See "Set Up an Organization," on page 38 for more information.

Using vCloud Director

When you log into vCloud Director, the first page you see is the Home page. The information that appears on this page are the most common tasks for your role.

Organization administrators see the **Set up this organization** link as their first task. They also see tasks under these headings.

- **Organizations and resources**
- **Content**
- **Users & Groups**

The vApps in your organization are displayed for easy access.

Catalog authors see links to these tasks.

- **Add Cloud Computer System**
- **Build new vApp**
- **Manage Catalogs**
- **New Catalog**

vApp authors see links to these tasks.

- **Add Cloud Computer System**
- **Build new vApp**

vApp users see links to these tasks.

- **Add Cloud Computer System**

The vApps in your organization are displayed for easy access.

Console Access Only users have a read-only access to vCloud Director.

Set Mozilla Firefox Options

These options and settings help you display and use the vCloud Director Web console in Mozilla Firefox.

Prerequisites

You have the following.

- At least Firefox 3.x
- SSL 3.0 Encryption
- TLS 1.0 Encryption

Procedure

1 In Firefox, select **Tools > Options**.

2 Click **Content** and select the **JavaScript** check box.

3 Click **Privacy**.

4 In the **Firefox will:** drop-down menu, select **Use custom settings for history**.

5 Select the **Accept cookies from sites**.

This selection also selects the **Accept third-party cookies** check box.

6 Click **OK**.

Bypass the Proxy in Mozilla Firefox

You can configure the Firefox proxy server to bypass certain Web addresses.

If all of these conditions exist, you can configure Firefox to bypass specific Web addresses.

- The internal network is configured with a proxy server to access the external network.
- The browser's proxy server connection has no local exceptions.
- The proxy is not configured to look in the internal network after not finding or connecting to the target on the external network.
- The user looks for a target on the internal network using Firefox.

Procedure

1 Select an option.

Operating System	Action
Windows	Tools > Options
Linux	Edit > Preferences

2 Click the **Advanced** button.

3 On the **Network** tab, click the **Settings** button.

4 Enter the IP of the cell or load balancer in the **No Proxy for:** field.

The specified Web addresses are bypassed by the Firefox proxy server.

Set Microsoft Internet Explorer Options

These options help you display and use the vCloud Director Web console in Microsoft Internet Explorer.

You have the following.

- At least Internet Explorer 7.
- SSL 3.0 Encryption
- TLS 1.0 Encryption

Procedure

1 In Internet Explorer, select **Tools > Internet Options**.

2 Click the **Security** tab.

3 Select the **Internet content** zone for the vCloud Director server.

4 Click **Custom Level** and select **Enable** or **Prompt** for these options.

- **Download signed ActiveX controls**
- **Run ActiveX controls and plug-ins**
- **Allow META REFRESH**
- **Active scripting of Microsoft web browser control**

5 Click **OK**.

6 Click the **Advanced** tab.

7 If you are using Internet Explorer on Windows 2003, complete these tasks.

a Select **Start > Settings > Control Panel**.

b Select **Add or Remove Programs**.

c Click **Add/Remove Windows Components**.

d Disable **Internet Explorer Enhanced Security Configuration**.

Bypass the Proxy in Internet Explorer

You can configure the Internet Explorer proxy server to bypass certain Web addresses.

If all of these conditions exist, you can configure Internet Explorer to bypass specific Web addresses.

- The internal network is configured with a proxy server to access the external network.

- The browser's proxy server connection has no local exceptions.
- The proxy is not configured to look in the internal network after not finding or connecting to the target on the external network.
- The user looks for a target on the internal network using Internet Explorer.

Procedure

1. Type the IP address of the cell or load balancer so that VMware Remote Console (VMRC) can bypass the proxy setting.
2. Select **Tools > Internet Options**.
3. On the **Connections** tab, click **LAN Settings** in the bottom panel.
4. In the Proxy Server panel, click **Advanced**.
5. In the Exception panel, in the **Do not use proxy server for addresses beginning with:** text box, type the IP address of the cell or load balancer.

   If the configuration management vehicle supports the use of regular expressions, you must type the DNS name of the cell or load balancer.
6. Click **OK**.

The specified Web addresses are bypassed by the Internet Explorer proxy server.

Set User Preferences

You can set certain display and system alerts preferences that take effect every time you log in to the system.

Procedure

1. In the title bar of the Web console, click **Preferences**.
2. Click the **Defaults** tab.
3. Select the page to display when you log in.
4. Select the number of days or hours before a runtime lease expires that you want to receive an email notification.
5. Select the number of days or hours before a storage lease expires that you want to receive an email notification.
6. Click **OK**.

Change Your Password

If you have a local (non-LDAP) user account, you can change your password.

Procedure

1. Log in to your organization.
2. In the title bar of the Web console, click **Preferences**.
3. On the **Change Password** tab, type your current password, type your new password, and retype your new password.
4. Click **OK**.

   vCloud Director logs you out.

What to do next

Log in using your new password.

Managing Users and Groups 2

An organization administrator is the only one who can add users and groups to an organization. The organization administrator assigns each user or group a role within the organization. Your role controls what you can see and do in vCloud Director.

An organization administrator can create local user accounts within an organization or import users and groups from an LDAP server. Contact your system administrator to set up an LDAP connection.

These default roles exist in vCloud Director.

Organization Administrator	Administers the organization
Catalog Author	Creates and publishes new catalogs
vApp Author	Creates vApps and uses catalogs
vApp User	Uses vApps created by others
Console Access Only	Uses virtual machine guest operating systems and siews virtual machine state and properties

Contact your system administrator to create custom roles.

This chapter includes the following topics:

- "Managing Users," on page 15
- "Working with Groups," on page 18

Managing Users

The **Users** page displays a list of users your organization. You can see whether the users are active, their role, and whether they are local or LDAP.

As an organization administrator, you can complete these operations.

- Add a new user
- Import users from LDAP
- Send email notifications
- Deactivate a user
- Modify a user's properties
- Delete a user

Add a Local User

Adding local users allows organization administrators to provide access to users who do not exist on an LDAP server. You can also add local users if you do not plan to use an LDAP server.

Procedure

1 Click **Administration**.

2 In the left pane, select **Members > Users**.

3 Click the **New User** button.

4 Type the user name and password.

5 Select a role.

To create a custom role, contact your system administrator.

6 (Optional) Type the contact information.

7 Select the stored and running virtual machine quota limits for this user.

8 Click **OK**.

The new user appears on the **Users** page.

Import an LDAP User

Organization administrators can import users from an LDAP server.

Contact a system administrator to configure LDAP settings for your organization.

Prerequisites

The LDAP settings for the organization must be set up and working.

Procedure

1 Click **Administration**.

2 In the left pane, select **Members > Users**.

3 Click the **Import Users from LDAP** button.

4 Type the full or partial user name and click **Search**.

5 Select a user and click **Add**.

6 Select a role for the imported user.

7 Click **OK**.

vCloud Director imports the selected user from your LDAP server into your organization.

Edit a User

An organization administrator can edit local user properties such as the password, role, contact information, and quotas. For LDAP users, you can only edit their role and quotas.

Procedure

1 Click **Administration**.

2 In the left pane, select **Members > Users**.

3 Select a user, right-click, and click **Properties**.

4 Modify the necessary properties and click **OK**.

Delete a User

If a user leaves the company or moves to another organization, an organization administrator can delete a user from the organization.

Procedure

1 Click **Administration**.

2 In the left pane, select **Members > Users** .

3 Select a user, right-click, and select **Disable Account**.

4 Reselect this user, right-click, and select **Delete**.

5 Click **OK** .

The user is deleted from your organization.

Send User Notifications

An organization administrator can send an email notification to users to notify them of events or issues in the organization.

Procedure

1 Click **Administration**.

2 In the left pane, select **Members > Users**.

3 Click the **Notify** button.

If you select a user and then click this button, the user's name appears as the recipient.

4 Select the recipients and type a subject.

5 Type the message.

6 Click **Send Email**.

The notification is sent to the selected recipients.

Delete Users in Lost and Found

If a user in your organization is removed from a group, if their group is disabled/removed in LDAP, or if the user is deleted/disabled in LDAP, the user appears on the **Lost & Found** page. An organization administrator can delete the user from the system and assume ownership of the user's objects (for example vApps and vApp templates).

Procedure

1 Click **Administration**.

2 In the left pane, select **Members > Lost & Found**.

3 Right-click a user in the list and click **Delete**.

4 Click **OK**.

vCloud Director transfers ownership of the user's objects to you unless you deselect the **Transfer user's objects to me** check box.

Disable or Enable User Accounts

An organization administrator can disable a user account to log the user out of the Web console and prevent the user from logging in again. You can enable a user to allow them to log in.

Procedure

1 Click **Administration**.

2 In the left pane, select **Members > Users**.

3 Select a user, right-click, and select **Disable Account** or **Enable Account**.

Disable user accounts have a red circle in the **Enabled** column and enabled user accounts have a green check mark.

What to do next

After you disable a user's account, you can delete that user. See "Delete a User," on page 17

View and Change a User's Role

An organization administrator assigns a role when adding a user to the organization. The organization administrator can change the user's role later to give the user more rights or fewer rights.

Procedure

1 Click **Administration**.

2 In the left pane, select **Members > Users**.

3 Select a user, right-click, and select **Properties**.

4 In the **User role in organization:** drop-down menu, select a new role for the user.

The definition of each role appears as a tool tip.

5 Click **OK**.

Working with Groups

On the **Groups** page, you can review the list of groups in your organization.

You can see group names and their assigned roles. As an organization administrator, you can import groups into your organization, delete groups from your organization, and modify the role of a group.

Import a Group

An organization administrator can import LDAP groups into an organization.

Contact a system administrator to configure LDAP settings for your organization.

Prerequisites

The LDAP settings for the organization must be set up and working.

Procedure

1 Click **Administration**.

2 In the left pane, select **Members > Groups**.

3 Click the **Import Groups from LDAP** button.

4 Type the full or partial group name and click **Search**.

5 Select a group and click **Add**.

6 Select a role for the group.

All the users in the group will be assigned this role.

7 Click **OK**.

The group is imported into your organization.

Delete a Group

An organization administrator can delete a group to remove it from the organization.

Deleting a group from an organization affects users who are members of the organization based solely on their membership in the deleted group. These users will not be able to log in to the organization. When you delete a group from an organization the group still exists in LDAP.

Procedure

1 Click **Administration**.

2 In the left pane, select **Members > Groups**.

3 Select a group, right-click, and select **Delete**.

4 Click **Yes**.

Modify the Role of a Group

An organization administrator can review and modify the role assigned to a group in your organization.

Procedure

1 Click **Administration**.

2 In the left pane, select **Members > Groups**.

3 Select a group, right-click, and select **Properties**.

4 Select another role for this group.

5 Click **OK**.

The new role for this group appears in the **Groups** page.

Managing Cloud Resources 3

A vCloud Director system administrator creates and assigns virtual datacenters and networks to an organization. An organization administrator can view information about these resources and perform a limited set of management tasks. Contact your system administrator if you need more organization virtual datacenters or organization networks..

This chapter includes the following topics:

- "Managing Virtual Datacenters," on page 21
- "Managing Organization Networks," on page 22
- "Managing Expired Items," on page 36

Managing Virtual Datacenters

Virtual datacenters (vDCs) provide processor, memory, and storage resources to your organization. They are assigned to your organization by your system administrator. An organization can have multiple vDCs.

Display Virtual Datacenters

When you display the vDCs in your organization, you can monitor the resources, users, and policy settings that you manage.

You are an organization administrator.

Procedure

1 Click **Administration**.

2 In the left pane, select **Cloud Resources > Virtual Datacenters**.

A list of vDCs in your organization appears in the right pane.

3 For details about a vDC, right-click, and select **Open**.

The vApps, vApp templates, media, and networks attached to this vDC are displayed. When you click through each tab, you can right click on an object to see the operations you can complete.

Review Virtual Datacenter Properties

You can review the properties of the vDCs that are assigned to your organization.

Procedure

1 Click **Administration**.

2 Select **Cloud Resources > Virtual Datacenters**.

3 Select a vDC, right-click, and select **Properties**.

4 Review the properties and click **OK**.

What to do next

To modify your organizational vDCs, contact your system administrator.

Monitor Your Virtual Datacenter

You can monitor the vDC assigned to your organization and determine when to request additional capacity.

You are an organization administrator.

Procedure

1 Click **Administration**.

2 Select **Cloud Resources > Virtual Datacenters**.

3 Click the **Monitor** button.

Details about the processor, memory, storage, and allocation model appear.

What to do next

Contact your system administrator for more capacity.

Manage Your Virtual Datacenters

You can review information such as the status, allocation model, and the number of vApps in a vDC in your organization.

You are an organization administrator

Procedure

1 Click **Administration**.

2 In the left pane, select **Cloud Resources > Virtual Datacenters.**

3 Click the **Manage** button.

4 Review the information.

What to do next

You can open the vDC to see the objects in it, notify users about issues or changes, or review the vDCs properties. Contact your system administrator to make changes to your vDC.

Managing Organization Networks

Organization networks are created and assigned to your organization by a system administrator. An organization administrator can view information about his networks, configure network services, and more.

There are three type of organization networks.

Table 3-1. Types of Organization Networks

Organization Network Type	Description
Direct	Accessible by multiple organizations. Virtual machines belonging to different organizations can connect to and see traffic on this network. This network provides direct layer 2 connectivity to machines outside of the organization. Machines outside of this organization can connect to machines within the organization directly.
Routed	Accessible only by this organization. Only virtual machines within this organization can connect to this network. This network also provides controlled access to an external network. System administrators and organization administrators can configure network address translation (NAT), firewall, and VPN settings to make specific virtual machines accessible from the external network.
Internal	Accessible only by this organization. Only virtual machines within this organization can connect to and see traffic on this network. This network provides an organization with an isolated, private network that multiple vApps can connect to. This network provides no connectivity to machines outside this organization. Machines outside of this organization have no connectivity to machines within the organization.

Configuring Network Services for an Organization Network

An organization administrator can configure network services, such as DHCP, firewalls, network address translation (NAT), VPN, and static routing for certain organization networks.

The network services available depend on the type of organization network.

Table 3-2. Network Services Available by Network Type

Organization Network Type	DHCP	Firewall	NAT	VPN	Static Routing
Direct					
Routed	X	X	X	X	X
Internal	X				

Configure DHCP for an Organization Network

Organization administrators can configure certain organization networks to provide DHCP services to virtual machines in the organization.

When you enable DHCP for an organization network, connect a NIC on virtual machine in the organization to that network, and select **DHCP** as the IP mode for that NIC, vCloud Director assigns a DHCP IP address to the virtual machine when you power it on.

Prerequisites

An routed organization network or an internal organization network.

Procedure

1 Click **Administration**.

2 Select **Cloud Resources > Networks**.

3 Right-click the organization network name and select **Configure Services**.

4 Click the **DHCP** tab and select **Enable DHCP**.

5 Type a range of IP addresses or use the default range.

vCloud Director uses these addresses to satisfy DHCP requests. The range of DHCP IP addresses cannot overlap with the static IP pool for the organization network.

6 Set the default lease time and maximum lease time or use the default values.

7 Click **OK**.

vCloud Director updates the network to provide DHCP services.

Enable the Firewall for an Organization Network

An organization administrator can configure certain organization networks to provide firewall services. Enable the firewall on an organization network to enforce firewall rules on incoming traffic, outgoing traffic, or both.

When you enable the firewall, you can specify a default firewall action to deny all incoming and outgoing traffic or to allow all incoming and outgoing traffic. You can also add specific firewall rules to allow or deny traffic that matches the rules to pass through the firewall. These rules take precedence over the default firewall action. See "Add a Firewall Rule to an Organization Network," on page 24.

If a system administrator specified syslog server settings and those settings have been applied to the organization network, then you can log events related to the default firewall action. For information about applying syslog server settings, see "Apply Syslog Server Settings to an Organization Network," on page 35. To view the current syslog server settings see "View Syslog Server Settings for an Organization Network," on page 35.

Prerequisites

A routed organization network.

Procedure

1 Click **Administration**.

2 Select **Cloud Resources > Networks**.

3 Right-click the organization network name and select **Configure Services**.

4 Click the **Firewall** tab and select **Enable firewall**.

5 Select the default firewall action.

6 (Optional) Select the **Log** check box to log events related to the default firewall action.

7 Click **OK**.

Add a Firewall Rule to an Organization Network

An organization administrator can add firewall rules to an organization network that supports a firewall. You can create rules to allow or deny traffic that matches the rules to pass through the firewall.

For a firewall rule to be enforced, you must enable the firewall for the organization network. See "Enable the Firewall for an Organization Network," on page 24.

When you add a new firewall rule to an organization network, it appears at the bottom of the firewall rule list. For information about how to set the order in which firewall rules are enforced, see "Reorder Firewall Rules for an Organization Network," on page 25.

If a system administrator specified syslog server settings and those settings have been applied to the organization network, then you can log firewall rule events. For information about applying syslog server settings, see "Apply Syslog Server Settings to an Organization Network," on page 35. To view the current syslog server settings see "View Syslog Server Settings for an Organization Network," on page 35.

Prerequisites

A routed organization network.

Procedure

1 Click **Administration**.

2 Select **Cloud Resources > Networks**.

3 Right-click the organization network name and select **Configure Services**.

4 Click the **Firewall** tab and click **Add**.

5 Type a name for the rule.

6 Select the traffic direction.

7 Type the source IP address and select the source port.

For incoming traffic, the source is the external network. For outgoing traffic, the source is the organization network.

8 Type the destination IP and select the destination port.

For incoming traffic, the destination is the organization network. For outgoing traffic, the destination is the external network.

9 Select the protocol.

10 Select the action.

A firewall rule can allow or deny traffic that matches the rule.

11 Select the **Enabled** check box.

12 (Optional) Select the **Log network traffic for firewall rule** check box.

If you enable this option, vCloud Director sends log events to the syslog server for connections affected by this rule.

13 Click **OK** and **OK**.

Reorder Firewall Rules for an Organization Network

Firewall rules are enforced in the order in which they appear in the firewall list. An organization administrator can change the order of the rules in the list.

When you add a new firewall rule to an organization network, it appears at the bottom of the firewall rule list. To enforce the new rule before an existing rule, reorder the rules.

Prerequisites

A routed organization network with two or more firewall rules.

Procedure

1 Click **Administration**.

2 Select **Cloud Resources > Networks**.

3 Right-click the organization network name and select **Configure Services**.

4 Click the **Firewall** tab.

5 Drag the firewall rules to establish the order in which the rules are applied.

6 Click **OK**.

Enable IP Masquerading for an Organization Network

An organization administrator can configure certain organization networks to provide IP masquerade services. Enable IP masquerading on an organization network to hide the internal IP addresses of virtual machines from the external network.

When you enable IP masquerade, vCloud Director translates a virtual machine's private, internal IP address into a public IP address for outbound traffic.

Prerequisites

A routed organization network.

Procedure

1 Click **Administration**.

2 Select **Cloud Resources > Networks**.

3 Right-click the organization network name and select **Configure Services**.

4 Click the **NAT Mapping** tab and select **Enable IP Masquerade**.

5 Click **OK**.

Add a Port Forwarding Rule to an Organization Network

An organization administrator can configure certain organization networks to provide port forwarding by adding a NAT mapping rule. Port forwarding provides external access to services running on virtual machines on the organization network.

When you configure port forwarding, vCloud Director maps an external IP address and a port to a service running on a port on a virtual machine for inbound traffic.

When you add a new port forwarding rule to an organization network, it appears at the bottom of the NAT mapping rule list. For information about how to set the order in which NAT mapping rules are enforced, see "Reorder NAT Mapping Rules for an Organization Network," on page 27.

Only system administrators can assign external IP addresses to a network. Contact your system administrator if your organization network lacks external IP addresses.

Prerequisites

A routed organization network and an external IP address.

Procedure

1 Click **Administration**.

2 Select **Cloud Resources > Networks**.

3 Right-click the organization network name and select **Configure Services**.

4 Click the **NAT Mapping** tab and click **Add**.

5 Select **Port Forwarding** and configure the port forwarding rule.

   a Select an external IP address.

   b Select an external port.

   c Type the IP address of the destination virtual machine.

   - If the virtual machine is fenced, type its external IP address.
   - If the virtual machine is not fenced, type its internal IP address.

d Select an internal port.

e Select a protocol for the type of traffic to forward.

f Click **OK**.

6 Click **OK**.

Add an IP Translation Rule to an Organization Network

An organization administrator can configure certain organization networks to provide IP translation by adding a NAT mapping rule.

When you add a new IP translation rule to an organization network, it appears at the bottom of the NAT mapping rule list. For information about how to set the order in which NAT mapping rules are enforced, see "Reorder NAT Mapping Rules for an Organization Network," on page 27.

When you create an IP translation rule for a network, vCloud Director adds a DNAT and SNAT rule to the vShield Edge associated with the network's port group. The DNAT rule translates an external IP address to an internal IP address for inbound traffic. The SNAT rule translates an internal IP address to an external IP address for outbound traffic. If the network is also using IP masquerade, the SNAT rule takes precedence.

Only system administrators can assign external IP addresses to a network. Contact your system administrator if your organization network does not have external IP addresses.

Prerequisites

A routed organization network and an external IP address.

Procedure

1 Click **Administration**.

2 Select **Cloud Resources > Networks**.

3 Right-click the organization network name and select **Configure Services**.

4 Click the **NAT Mapping** tab and click **Add**.

5 Select **IP Translation** and configure the rule.

a Select an external IP address.

b Type the IP address of the destination virtual machine.

- If the virtual machine is fenced, type its external IP address.
- If the virtual machine is not fenced, type its IP address.

c Click **OK**.

6 Click **OK**.

Reorder NAT Mapping Rules for an Organization Network

NAT mapping rules are enforced in the order in which they appear in the NAT mapping list. An organization administrator can change the order of the rules in the list.

When you add a new NAT mapping rule (IP translation or port forwarding) to an organization network, it appears at the bottom of the NAT mapping rule list. To enforce the new rule before an existing rule, reorder the rules.

Prerequisites

A routed organization network with two or more NAT mapping rules.

Procedure

1 Click **Administration**.

2 Select **Cloud Resources > Networks**.

3 Right-click the organization network name and select **Configure Services**.

4 Click the **NAT Mapping** tab.

5 Click and drag the rules to establish the order in which the rules are applied.

6 Click **OK**.

Enable Site-to-Site VPN for an Organization Network

An organization administrator can enable site-to-site VPN for an organization network and then create a secure tunnel to another network.

vCloud Director supports site-to-site VPN between organization networks in the same organization, organization networks in different organizations (including organization networks in different instances of vCloud Director), and remote networks.

Prerequisites

- A routed organization network.
- vShield Manager 5.0.

Procedure

1 Click **Administration**.

2 Select **Cloud Resources > Networks**.

3 Right-click the organization network name and select **Configure Services**.

4 Click the **Site-to-Site VPN** tab and select **Enable site-to-site VPN**.

5 (Optional) Type a public IP address.

If the external network to which the organization network is routed is behind a NAT device, you must provide a publicly accessible IP address that faces the Internet.

6 Click **OK**.

What to do next

Create a VPN tunnel to another network.

Create a VPN Tunnel Within an Organization

An organization administrator can create a VPN tunnel between two organizations networks in the same organization.

If the tunnel endpoints have a firewall between them, you must configure it to allow the following IP protocols and UDP ports:

- IP Protocol ID 50 (ESP)
- IP Protocol ID 51 (AH)
- UDP Port 500 (IKE)
- UDP Port 4500

Prerequisites

- At least two routed organization networks with nonoverlapping IP subnets and site-to-site VPN enabled on both networks.
- vShield Manager 5.0.

Procedure

1 Click **Administration**.

2 Select **Cloud Resources > Networks**.

3 Right-click the organization network name and select **Configure Services**.

4 Click the **Site-to-Site VPN** tab and click **Add**.

5 Type a name and optional description.

6 Select **a network in this organization** from the drop-down menu and select a peer network.

7 Review the tunnel settings and click **OK**.

vCloud Director configures both peer network endpoints.

Create a VPN Tunnel Between Organizations

An organization administrator can create a VPN tunnel between two organization networks in different organizations. The organizations can be part of the same vCloud Director installation or a different installation.

If the tunnel endpoints have a firewall between them, you must configure it to allow the following IP protocols and UDP ports:

- IP Protocol ID 50 (ESP)
- IP Protocol ID 51 (AH)
- UDP Port 500 (IKE)
- UDP Port 4500

Prerequisites

- A routed organization network in each of the organizations. The organization networks must have nonoverlapping IP subnets and site-to-site VPN enabled.
- vShield Manager 5.0.

Procedure

1 Click **Administration**.

2 Select **Cloud Resources > Networks**.

3 Right-click the organization network name and select **Configure Services**.

4 Click the **Site-to-Site VPN** tab and click **Add**.

5 Type a name and optional description.

6 Select **a network in another organization** from the drop-down menu.

7 Click **Connect to another organization**, type the login information for the peer organization, and click **Continue**.

Option	Description
vCloud URL	Base URL of the vCloud instance that contains the peer organization. For example, **`https://www.example.com`**. Do not include **`/cloud`** or **`/cloud/org/`*`orgname`*** in the URL.
Organization	Organization name that is used as the unique identifier in the organization URL. For example, if the organization URL is **`https://www.example.com/cloud/org/myOrg`**, type **`myOrg`**.
Username	User name of an organization administrator or system administrator that has access to the organization.
Password	Password associated with the user name.

8 Select a peer network.

9 Review the tunnel settings and click **Connect**.

vCloud Director configures both peer network endpoints.

Create a VPN Tunnel to a Remote Network

An organization administrator can create a VPN tunnel between an organization network and a remote network.

If the tunnel endpoints have a firewall between them, you must configure it to allow the following IP protocols and UDP ports:

- IP Protocol ID 50 (ESP)
- IP Protocol ID 51 (AH)
- UDP Port 500 (IKE)
- UDP Port 4500

Prerequisites

- A routed organization network and a routed remote network that uses IPSec.
- vShield Manager 5.0.

Procedure

1 Click **Administration**.

2 Select **Cloud Resources > Networks**.

3 Right-click the organization network name and select **Configure Services**.

4 Click the **Site-to-Site VPN** tab and click **Add**.

5 Type a name and optional description.

6 Select **a remote network** from the drop-down menu.

7 Type the peer settings.

8 Review the tunnel settings and click **OK**.

vCloud Director configures the organization peer network endpoint.

What to do next

Manually configure the remote peer network endpoint.

Enable Static Routing for an Organization Network

An organization administrator can configure certain organization networks to provide static routing services. After you enable static routing on an organization network, you can add static routes to allow traffic between different vApp networks routed to the organization network.

Prerequisites

A routed organization network.

Procedure

1 Click **Administration**.

2 Select **Cloud Resources > Networks**.

3 Right-click the organization network name and select **Configure Services**.

4 On the **Static Routing** tab, select **Enable static routing** and click **OK**.

What to do next

Create static routes.

Add Static Routes Between vApp Networks Routed to the Same Organization Network

An organization administrator can add static routes between two vApp networks that are routed to the same organization network. Static routes allow traffic between the networks.

You cannot add static routes between overlapping networks or fenced vApps. After you add a static route to an organization network, make sure to configure the network firewall rules to allow traffic on the static route. For vApps with static routes, you should select the **Always use assigned IP addresses until this vApp or associated networks are deleted** check box.

Static routes only function when the vApps included in the routes are running. If you change the parent network of a vApp, delete a vApp, or delete a vApp network, and the vApp includes static routes, those routes cannot function and you must remove them manually.

Prerequisites

- vShield 5.0.
- A routed organization network.
- Static routing is enabled on the organization network.
- Two vApp networks routed to the organization network.
- The vApp networks are in vApps that were started at least once.

Procedure

1 Click **Administration**.

2 Select **Cloud Resources > Networks**.

3 Right-click the organization network name and select **Configure Services**.

4 On the **Static Routing** tab, click **Add**.

5 Type a name, network address, and next hop IP.

The network address is for the first vApp network to which you want to add a static route. The next hop IP is the external IP address of that vApp network's router.

6 Select **Within this network** and click **OK**.

7 Click **OK**.

8 Repeat Step 4 through Step 7 to add a route to the second vApp network.

Example: Static Routing Example

vApp Network 1 and vApp Network 2 are both routed to Org Network Shared. You can create static routes on the organization network to allow traffic between the vApp networks. You can use information about the vApp networks to create the static routes.

Table 3-3. Network Information

Network Name	Network Specification	Router External IP Address
vApp Network 1	192.168.1.0/24	192.168.0.100
vApp Network 2	192.168.2.0/24	192.168.0.101
Org Network Shared	192.168.0.0/24	NA

On Org Network Shared, create a static route to vApp Network 1 and another static route to vApp Network 2.

Table 3-4. Static Routing Settings

Static Route to Network	Route Name	Network	Next Hop IP Address	Route
vApp Network 1	tovapp1	192.168.1.0/24	192.168.0.100	Within this network
vApp Network 2	tovapp2	192.168.2.0/24	192.168.0.101	Within this network

What to do next

Create firewall rules to allow traffic on the static routes.

Add Static Routes Between vApp Networks Routed to Different Organization Networks

An organization administrator can add static routes between two vApp networks that are routed to different organization networks. Static routes allow traffic between the networks.

You cannot add static routes between overlapping networks or fenced vApps. After you add a static route to an organization network, configure the network firewall rules to allow traffic on the static route. For vApps with static routes, select the **Always use assigned IP addresses until this vApp or associated networks are deleted** check box.

Static routes only function when the vApps included in the routes are running. If you change the parent network of a vApp, delete a vApp, or delete a vApp network, and the vApp includes static routes, those routes cannot function and you must remove them manually.

Prerequisites

- vShield 5.0.
- Two organization networks routed to the same external network.
- Static routing is enabled on both organization networks.
- A vApp network routed to each organization network.
- The vApp networks are in vApps that were started at least once.

Procedure

1 Click **Administration**.

2 Select **Cloud Resources > Networks**.

3 Right-click the organization network name and select **Configure Services**.

4 On the **Static Routing** tab, click **Add**.

5 Type a name, network address, and next hop IP address.

The network address is for the vApp network to which you want to add a static route. The next hop IP address is the external IP address of the router for the organization network to which that vApp network is routed.

6 Select **To external network** and click **OK**.

7 Click **Add**.

8 Type a name, network address, and next hop IP address.

The network address is for the vApp network that is routed to this organization network. The next hop IP address is the external IP address of the router for that vApp network.

9 Select **Within this network** and click **OK**.

10 Repeat Step 3 through Step 9 to add static routes to the second organization network.

Example: Static Routing Example

vApp Network 1 is routed to Org Network 1. vApp Network 2 is routed to Org Network 2. You can create static routes on the organization networks to allow traffic between the vApp networks. You can use information about the vApp networks and organization networks to create the static routes.

Table 3-5. Network Information

Network Name	Network Specification	Router External IP Address
vApp Network 1	192.168.1.0/24	192.168.0.100
vApp Network 2	192.168.11.0/24	192.168.10.100
Org Network 1	192.168.0.0/24	10.112.205.101
Org Network 2	192.168.10.0/24	10.112.205.100

On Org Network 1, create a static route to vApp Network 2 and another static route to vApp Network 1. On Org Network 2, create a static route to vApp Network 1 and another static route to vApp Network 2.

Table 3-6. Static Routing Settings for Org Network 1

Static Route to Network	Route Name	Network	Next Hop IP Address	Route
vApp Network 2	tovapp2	192.168.11.0/24	10.112.205.100	To external network
vApp Network 1	tovapp1	192.168.1.0/24	192.168.0.100	Within this network

Table 3-7. Static Routing Settings for Org Network 2

Static Route to Network	Route Name	Network	Next Hop IP Address	Route
vApp Network 1	tovapp1	192.168.1.0/24	10.112.205.101	To external network
vApp Network 2	tovapp2	192.168.11.0/24	192.168.10.100	Within this network

What to do next

Create firewall rules to allow traffic on the static routes.

Reset an Organization Network

If the network services, such as DHCP settings, firewall settings, and so on, that are associated with an organization network are not working as expected, reset the network.

You are an organization administrator.

No network services are available while an organization network resets.

Prerequisites

An external NAT-routed organization network or an internal organization network.

Procedure

1 Click **Administration**.

2 In the left pane, select **Cloud Resources > Networks**.

3 Select an organization network, right-click, and select **Reset Network**.

4 Click **Yes**.

View IP Usage for an Organization Network

You can view a list of the IP addresses from an organization network IP pool that are currently in use.

You are an organization administrator.

Procedure

1 Click **Administration**.

2 In the left pane, select **Cloud Resources > Networks**.

3 Select an organization network, right-click, and select **IP Allocations**.

Add IP Addresses to an Organization Network IP Pool

If an organization network is running out of IP addresses, you can add more addresses to its IP Pool.

You are an organization administrator.

You cannot add IP addresses to external organization networks that have a direct connection.

Procedure

1 Select **Administration**.

2 In the left pane, select **Cloud Resources > Networks**.

3 Select an organization network, right-click, and select **Properties**.

4 On the **Network Specification** tab, type an IP address or a range of IP addresses in the text box and click **Add**.

5 Click **OK**.

View vApps and vApp Templates That Use an Organization Network

You can view a list of the all the vApps and vApp templates that include virtual machines with a NIC connected to an organization network.

Prerequisites

You are an organization administrator.

Procedure

1 Click **Administration**.

2 In the left pane, select **Cloud Resources > Networks**.

3 Select an organization network, right-click, and select **Connected vApps**.

4 Click **OK**.

View Syslog Server Settings for an Organization Network

You can view the syslog server settings for a routed organization network.

You are an organization administrator.

vCloud Director supports logging events related to firewall rules to a syslog server specified by a system administrator.

If an organization network does not have any syslog server settings and you think it should, or if the settings are not what you expected, then you can synchronize the network with the most current syslog server settings. See "Apply Syslog Server Settings to an Organization Network," on page 35. If there is still a problem after you synchronize, contact your system administrator.

Prerequisites

An external NAT-routed organization network.

Procedure

1 Click **Administration**.

2 In the left pane, select **Cloud Resources > Networks**.

3 Select an organization network, right-click, and select **Properties**.

4 Click the **Syslog Server Settings** tab.

Apply Syslog Server Settings to an Organization Network

You apply syslog server settings to a routed organization network to enable firewall rule logging.

You are an organization administrator.

Syslog server settings can only be specified by a system administrator. You should apply those settings to any organization network that was created before the system administrator specified them. You should also apply the syslog server settings to an organization network any time a system administrator changes the settings.

Prerequisites

An external NAT-routed organization network.

Procedure

1 Click **Administration**.

2 In the left pane, select **Cloud Resources > Networks**.

3 Select an organization network, right-click, and select **Synchronize syslog server settings**.

4 Click **Yes**.

Managing Expired Items

When vApps or vApp templates expire, you can determine whether you want to renew or delete them.

Manage Expired vApps

You can display a list of expired vApps, delete them, or restore them to your organization.

You are an organization administrator.

The organization policy for what to do when a vApp storage lease expires is set to **Move to Expired Items**. See "Configure Organization Lease, Quota, and Limit Settings," on page 40.

Procedure

1 Select **My Cloud > Expired Items**.

2 On the **Expired vApps** tab, review the list of expired vApps.

3 Right-click a vApp and select **Delete** or **Renew** and click **Yes**.

If you selected **Delete**, the vApp is deleted from the list. If you selected **Renew**, the restored vApp appears on the **vApps** page.

Manage Expired vApp Templates

You can display a list of expired vApp templates and delete them or restore them to your organization.

You are an organization administrator.

The organization policy for what to do when a vApp template storage lease expires is set to **Move to Expired Items**. See "Configure Organization Lease, Quota, and Limit Settings," on page 40.

Procedure

1 Select **My Cloud > Expired Items**.

2 Click the **Expired vApp Templates** tab.

3 Right-click on a vApp template, select **Delete** or **Renew**, and click **Yes**.

If you selected **Delete**, the vApp template is deleted from the list. If you selected **Renew**, the vApp template is restored to its catalog.

Working in an Organization 4

Most operations in vCloud Director occur in an organization. The system administrator creates the organization and assigns an organization administrator to it.

The system administrator emails the URL of the organization to the organization administrator, who can log in to the organization and set it up. In the Home page the organization administrator clicks the **Set up the Organization** link to assign resources and manage a variety of operations on the organization.

This chapter includes the following topics:

- "Understanding Leases," on page 37
- "Set Up an Organization," on page 38
- "Review Your Organization Profile," on page 40
- "Modify Your Email Settings," on page 41
- "Modify Your Organization's Policies," on page 41
- "Set Default Domain for Organization Virtual Machines," on page 42
- "Manage Users and Groups in Your Organization," on page 42
- "Manage Resources in Your Organization," on page 42
- "Manage Virtual Machines in Your Organization," on page 43
- "Viewing Organization Log Tasks and Events," on page 43

Understanding Leases

Creating an organization involves specifying leases. Leases provide a level of control over an organization's storage and compute resources by specifying the maximum amount of time that vApps can be running and that vApps and vApp templates can be stored.

The goal of a runtime lease is to prevent inactive vApps from consuming compute resources. For example, if a user starts a vApp and goes on vacation without stopping it, the vApp continues to consume resources.

A runtime lease begins when a user starts a vApp. When a runtime lease expires, vCloud Director stops the vApp.

The goal of a storage lease is to prevent unused vApps and vApp templates from consuming storage resources. A vApp storage lease begins when a user stops the vApp. Storage leases do not affect running vApps. A vApp template storage lease begins when a user adds the vApp template to a vApp, adds the vApp template to a workspace, downloads, copies, or moves the vApp template.

When a storage lease expires, vCloud Director marks the vApp or vApp template as expired, or deletes the vApp or vApp template, depending on the organization policy you set.

For more information about specifying lease settings, see "Configure Organization Lease, Quota, and Limit Settings," on page 40.

Users can configure email notification to receive a message before a runtime or storage lease expires. See "Set User Preferences," on page 13 for information about lease expiration preferences.

Set Up an Organization

After you receive the URL of your organization from the system administrator, you must set it up. On the vCloud Director **Home** page, click **Set up this organization**.

You are an organization administrator.

Procedure

1 Change the Organization Full Name on page 38

You can change the full name of an organization. This name appears in the Cloud Director application header when users log in.

2 Import LDAP Users and Groups on page 38

You can add users and groups from an LDAP server to the organization and assign them a role within the organization.

3 Add Local Users to the Organization on page 39

Every organization should have at least one local, non-LDAP, organization administrator account, so that users can log in even if the LDAP service is unavailable.

4 Configure Email Preferences on page 39

vCloud Director requires an SMTP server to send user notification and system alert emails. An organization can use the system email settings or use its own email settings.

5 Configure Organization Lease, Quota, and Limit Settings on page 40

Leases, quotas, and limits constrain the ability of organization users to consume storage and processing resources. Use these settings to prevent users from depleting or monopolizing an organization's resources.

Change the Organization Full Name

You can change the full name of an organization. This name appears in the Cloud Director application header when users log in.

You are an organization administrator.

Procedure

1 On **Name this Organization** page, in the **Organization full name**, type the new full name.

2 (Optional) Type a description of the organization.

3 Click **Next.**

Import LDAP Users and Groups

You can add users and groups from an LDAP server to the organization and assign them a role within the organization.

Prerequisites

Verify that your organization has a valid connection to an LDAP server.

Procedure

1 Click **Import**.

2 Type a full or partial name of an LDAP user or group and click **Search**.

3 Select the users or groups to import and click **Add**.

4 Select a role for the users and groups and click **OK**.

5 Click **Next**.

Add Local Users to the Organization

Every organization should have at least one local, non-LDAP, organization administrator account, so that users can log in even if the LDAP service is unavailable.

Procedure

1 Click **Add**.

2 Type a user name and password.

3 Assign a role to the user.

4 (Optional) Type the contact information for the user.

5 Select **Unlimited** or type a user quota for stored and running virtual machines and click **OK**.

These quotas limit the user's ability to consume storage and compute resources in the organization.

6 Click **Next**.

Configure Email Preferences

vCloud Director requires an SMTP server to send user notification and system alert emails. An organization can use the system email settings or use its own email settings.

Procedure

1 Select an SMTP server option.

Option	Description
Use system default SMTP server	The organization uses the system SMTP server.
Set organization SMTP server	The organization uses its own SMTP server. Type the DNS host name or IP address and port number of the SMTP server. (Optional) Select the **Requires authentication** check box and type a user name and password.

2 Select a notification settings option.

Option	Description
Use system default notification settings	The organization uses the system notification settings.
Set organization notification settings	The organization uses its own notification settings. Type an email address that appears as the sender for organization emails, type text to use as the subject prefix for organization emails, and select the recipients for organization emails.

3 (Optional) Type a destination email address and click **Test Email Settings** to verify that all SMTP server settings are configured as expected.

4 Click **Next**.

Configure Organization Lease, Quota, and Limit Settings

Leases, quotas, and limits constrain the ability of organization users to consume storage and processing resources. Use these settings to prevent users from depleting or monopolizing an organization's resources.

For more information about leases, see "Understanding Leases," on page 37.

Procedure

1 Select the lease options for vApps and vApp templates.

Leases provide a level of control over an organization's storage and compute resources by specifying the maximum amount of time that vApps can run and that vApps and vApp templates can be stored. You can also specify what happens to vApps and vApp templates when their storage lease expires.

2 Select the quotas for running and stored virtual machines.

Quotas determine how many virtual machines each user in the organization can store and power on in the organization's virtual datacenters. The quotas that you specify act as the default for all new users added to the organization.

3 Select the limits for resource intensive operations.

Certain vCloud Director operations, for example copy and move, are more resource intensive than others. Limits prevent resource intensive operations from affecting all the users in an organization and also provide a defense against denial-of-service attacks.

4 Select the number of simultaneous VMware Remote Console connections for each virtual machine.

You might want to limit the number of simultaneous connections for performance or security reasons.

NOTE This setting does not affect Virtual Network Computing (VNC) or Remote Desktop Protocol (RDP) connections.

5 (Optional) Select the **Account lockout enabled** check box, select the number of invalid logins to accept before locking a user account, and select the lockout interval.

6 Click **Next**.

Review Your Organization Profile

You can review and modify some of the information in your organization's profile

You are an organization administrator.

Procedure

1 Click **Administration**.

2 In the left pane, select **Settings > General**.

3 You can complete these operations.

- Review your organization's default URL.
- Modify your organization's full name.
- Type a description.

4 Click **Apply**.

Modify Your Email Settings

You can review and modify the default email settings that were set when the system administrator created your organization.

You are an organization administrator.

Procedure

1 Click **Administration**.

2 In the left pane, select **Settings > Email**.

3 Select an SMTP server option.

Option	Description
Use system default SMTP server	The organization uses the system SMTP server.
Set organization SMTP server	The organization uses its own SMTP server. Type the DNS host name or IP address and port number of the SMTP server. (Optional) Select the **Requires authentication** check box and type a user name and password.

4 Select a notification settings option.

Option	Description
Use system default notification settings	The organization uses the system notification settings.
Set organization notification settings	The organization uses its own notification settings. Type an email address that appears as the sender for organization emails, type text to use as the subject prefix for organization emails, and select the recipients for organization emails.

5 (Optional) Type a destination email address and click **Test Email Settings** to verify that all SMTP server settings are configured as expected.

6 Click **Apply**.

Modify Your Organization's Policies

You can review and modify the default policies that were set by the system administrator when your organization was created.

You are an organization administrator.

Procedure

1 Click **Administration**.

2 In the left pane, select **Settings > Policies**.

3 Select the lease options for vApps and vApp templates.

Leases provide a level of control over an organization's storage and compute resources by specifying the maximum amount of time that vApps can be running and that vApps and vApp templates can be stored. You can also specify what happens to vApps and vApp templates when their storage lease expires.

4 Select the quotas for running and stored virtual machines.

Quotas determine how many virtual machines each user in the organization can store and power on in the organization's virtual datacenters. The quotas you specify act as the default for all new users added to the organization.

5 Select the limits for resource intensive operations.

Certain vCloud Director operations, for example copy and move, are more resource intensive than others. Limits prevent resource intensive operations from affecting all the users in an organization and also provide a defense against denial-of-service attacks.

6 Select the number of simultaneous VMware Remote Console connections for each virtual machine.

You may want to limit the number of simultaneous connections for performance or security reasons.

NOTE This setting does not affect Virtual Network Computing (VNC) or Remote Desktop Protocol (RDP) connections.

7 (Optional) Select the **Account lockout enabled** check box, select the number of invalid logins to accept before locking a user account, and select the lockout interval.

8 Click **Apply**.

Set Default Domain for Organization Virtual Machines

You can set a default domain which virtual machines created in your organization can join. Virtual machines can always join a domain for which they have credentials, regardless of whether or not you specify a default domain.

You are an organization administrator.

Procedure

1 Click **Administration**.

2 In the left pane, select **Settings > Guest Personalization**.

3 Select the **Enable domain join for virtual machines in this organization**.

4 Type the domain name, domain user name, domain password.

These credentials apply to a regular domain user, not a domain administrator.

5 Click **Apply**.

Manage Users and Groups in Your Organization

You can manage the roles and rights that users and groups have in your organization.

You are an organization administrator.

Procedure

1 Click **Administration**.

2 In the left pane, select **Members > Users** or **Members > Groups**.

You can modify properties or roles.

3 Right-click the user or group and select **Properties**.

4 Make the necessary changes and click **OK**.

Your user or group settings are updated. See also Chapter 2, "Managing Users and Groups," on page 15

Manage Resources in Your Organization

You must monitor and manage the resources you add to your organization.

You are an organization administrator.

Procedure

1 Click **Administration**.

2 In the left pane, under **Cloud Resources**, select **Virtual Datacenters** or **Networks**.

The vDCs and networks in your organization appear in the right pane. See also Chapter 3, "Managing Cloud Resources," on page 21

Manage Virtual Machines in Your Organization

You can manage virtual machines in your organization. Virtual machines provide access to vCloud Director operations at the virtual machine console level.

You are an organization administrator.

Procedure

1 Click **My Cloud**.

2 In the left pane, select **VMs**.

3 Select a virtual machine, right-click, and select **Properties**.

4 Modify the relevant properties in each of the tabs and click **OK**.

What to do next

For more information on managing virtual machines, see Chapter 9, "Working with Virtual Machines," on page 83.

Viewing Organization Log Tasks and Events

You can view tasks and events in your organization to monitor and audit vCloud Directory activities.

vCloud Director tasks are long-running operations and their status changes as the task progresses. For example, a task's status generally starts as `Running`. When the task finishes, its status changes to `Successful` or `Error`.

vCloud Director events are one-time occurrence that indicate an important part of an operation or a significant state change for a vCloud Director object. vCloud Director also logs an event every time a user logs in, and notes whether the attempt was successful or not.

View Organization Events

You can view the log for an organization to monitor organization-level events. Failed events and view events are listed by user.

You are an organization administrator.

Procedure

1 Click the **My Cloud**.

2 In the left pane, click **Logs**.

3 Click the **Events** tab.

vCloud Director displays information about each organization-level event.

4 Double-click an event for more information.

Only system administrators can view the details about most events.

View Organization Tasks

You can view the tasks in an organization, which helps you monitor and troubleshoot more effectively.

You are an organization administrator.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **Logs**.

3 On the **Tasks** tab, you can examine the tasks in the organization.

4 Select a task, right-click, and select **Open**.

5 Review the information and click **OK**.

What to do next

To troubleshoot a failed task, contact your system administrator.

Working with Catalogs 5

A catalog is a container for vApp templates and media files in an organization. Organization administrators and catalog authors can create catalogs in an organization. Catalog contents can be shared with other users in the organization and can also be published to all organizations in the vCloud Director installation.

There are two types of catalogs in vCloud Director; organization catalogs and public catalogs. Organization catalogs include vApp templates and media files that you can share with other users in the organization. If a system administrator enables catalog publishing for your organization, you can publish an organization catalog to create a public catalog. Organization administrators from any organization in the vCloud Director installation can view the vApp templates and media files in a public catalog and copy those files to a catalog in their organization for use by their members.

There are two ways to add vApp templates to a catalog. You can upload an OVF package directly to a catalog or save a vApp as a vApp template. For more information, see "Upload an OVF Package as a vApp Template," on page 57 and "Save a vApp as a vApp Template," on page 59. You can upload media files directly to a catalog. See "Upload Media Files," on page 51.

Members of an organization can access vApp templates and media files that they own or that are shared to them. Organization administrators and system administrators can share a catalog with everyone in an organization, or with specific users and groups in an organization. See "Share A Catalog," on page 47.

This chapter includes the following topics:

- "Add a New Catalog," on page 45
- "Access a Catalog," on page 46
- "Publish a Catalog," on page 46
- "Share A Catalog," on page 47
- "Change the Owner of a Catalog," on page 47
- "Delete a Catalog," on page 48
- "Modify the Properties of Your Catalog," on page 48
- "Understanding Catalogs and Their Contents," on page 48
- "Working in Published Catalogs," on page 49

Add a New Catalog

You can create catalogs to group your vApp templates and media files.

You are at least a catalog author.

Procedure

1 Click **Catalogs > My Organization's Catalogs**.

2 On the **Catalogs** tab, click the **Add Catalog** button.

3 Type a catalog name and optional description and click **Next**.

4 (Optional) To share the catalog with members of the organization, click **Add Members**, select users and groups, select an access level, click **OK**, and click **Next**.

5 Select a catalog publishing option and click **Next**..

Option	Description
Don't publish this catalog to other organizations	This catalog will not be visible or available to other organizations in the vCloud Director installation.
Publish to all organizations	This catalog will be visible to all other organizations in the vCloud Director installation. Users with the necessary rights (by default, organization administrators) can view catalog items and copy them to a local organization catalog.

NOTE This option might be unavailable, depending on your organizational settings.

6 Review the summary and click **Finish**.

Access a Catalog

Depending on your role in the organization, you can access catalogs in your organization and public catalogs that were published by other organizations.

- To access a public catalog, you must be an organization administrator .
- To access a catalog in your organization, you must be at least a vApp author.

Procedure

1 Click **Catalogs**.

2 In the left pane, click on a catalog option.

- **My Organization's Catalogs**
- **Public Catalogs**

3 In the right pane, select a catalog, right-click, and select **Open**.

Publish a Catalog

When you publish a catalog, all organizations in vCloud Director can see the catalog.

You are at least a catalog author.

Prerequisites

The system administrator has enabled catalog publishing for the organization.

Procedure

1 Click **Catalogs**.

2 Select a catalog, right-click, and select **Publish**.

3 Select **Publish to all organizations**.

4 Click **OK**.

Your catalog is available to organization administrators in all organizations.

Share A Catalog

Share a catalog to make its contents available to users in your organization. Users with the proper rights and access level can use vApp templates and media from the shared catalog to create their own vApps.

You are at least a catalog author.

Procedure

1 Click **Catalogs > My Organization's Catalogs**.

2 Select a catalog, right-click, and select **Share**.

3 Click **Add Members**.

4 Select the users and groups with whom you want to share the catalog.

Option	Action
Everyone in the organization	Select this option to share the catalog with everyone.
Specific users and groups	Select this option, click specific users and groups, and click **Add**.

5 Select an access level and click **OK**.

Option	Supported Actions
Read Only	Open, Add to My Cloud, Download, Copy to Catalog
Read/Write	Open, Add to My Cloud, Download, Copy to Catalog, Publish, Move to Catalog, Delete
Full control	Open, Add to My Cloud, Download, Copy to Catalog, Publish, Move to Catalog, Delete, Share

The actual actions a user can perform on a catalog and its contents depends on the intersection of the rights of the user and their access level to the catalog. Sharing a catalog with full control does not grant a user rights that the user does not already have.

6 Click **OK**.

Change the Owner of a Catalog

You can change the owner of a catalog. Before you can delete a user who owns a catalog, you must change the owner or delete the catalog.

You are an organization administrator.

Procedure

1 Click **Catalogs > My Organization's Catalogs**.

2 On the **Catalogs** tab, right-click a catalog and select **Change Owner**.

3 Select a user from the list or search for one.

You can search for a user by full name or their user name.

4 Click **OK**.

Delete a Catalog

You can delete a catalog from your organization.

You are at least a catalog author.

Prerequisites

The catalog must not contain any vApp templates or media files. You can move these items to a different catalog or delete them.

Procedure

1 Click **Catalogs**.

2 In the left pane, click **My Organization's Catalogs**.

3 Select a catalog, right-click, and select **Delete**.

4 Click **Yes**.

The empty catalog is deleted from your organization.

Modify the Properties of Your Catalog

You can review and modify your catalog properties.

You are at least a catalog author.

Procedure

1 Click **Catalogs**.

2 In the left pane, click **My Organization's Catalogs**.

3 Select a catalog, right-click, and select **Properties**.

4 Review the properties in the **General**, **Sharing**, and **Publishing** tabs.

5 Modify the relevant properties and click **OK**.

Your catalog properties are updated.

Understanding Catalogs and Their Contents

A catalog consists of a list of catalogs, vApp templates, and media files in your organization.

When you click the **Catalogs** button in the menu bar, these tabs appear.

- **Catalogs**
- **vApp Templates**
- **Media**

If you are an organization administrator, you can access published catalogs in the left pane.

Using vApp Templates in a Catalog

You can access vApp templates in a catalog in your organization or, if you are an organization administrator, from a published catalog.

To access a vApp template in a catalog in your organization, in the left pane, click **My Organization's Catalogs** and click on the **vApp Templates** tab. Select a vApp template and right-click to see the operations you can complete.

Using Media Files in a Catalog

You can access media files in a catalog in your organization or, if you are a organization administrator, a published catalog.

To access a media file in a catalog in your organization, in the left pane, click **My Organization's Catalogs** and click on the **Media** tab. Select a media file and right-click to see the operations you can complete.

Working in Published Catalogs

Organization administrators can access a published catalog and copy its vApp templates and media files to a catalog in their organization. They can then share the organization catalog with other members of their organization so they can use the vApp templates and media files.

Accessing vApp Templates from a Public Catalog

You can access vApp templates from published catalogs and copy them to your catalog.

You are an organization administrator.

Procedure

1 Click **Catalogs**.

2 In the left pane, click **Public Catalogs**.

3 On the **vApp Templates** tab, select a vApp template, right-click and select an operation.

- **Open**
- **Add to My Cloud**
- **Download**
- **Copy to Catalog**
- **Properties**

  You cannot modify properties until you copy the vApp template to your catalog. If you select **Add to My Cloud**, the vApp template is saved and added as a vApp.

4 Click **OK**.

The vApp template you selected is added to the specified catalog your organization.

Accessing a Media File from a Public Catalog

You can access a media file from a published catalog and add it to your organization.

You are an organization administrator.

Procedure

1 Click **Catalogs**.

2 In the left pane, click **Public Catalogs**.

  Media files are available for use if they reside in the same vDC as your Cloud vApp.

3 On the **Media** tab, select a media file, right-click and select **Copy to Catalog**.

4 Click **OK**.

The media file is copied to your catalog.

What to do next

You can select the media file and complete a variety of operations on it, such as move it to another catalog in your organization, delete it, or modify its properties.

Working with Media Files 6

The catalog allows you to upload, copy, move, and edit the properties of media files.

This chapter includes the following topics:

- "Upload Media Files," on page 51
- "Resume the Upload of a Media File," on page 52
- "Copy Media Files to a Catalog," on page 52
- "Move Media Files to Another Catalog," on page 52
- "Delete Media Files," on page 53
- "Modify Media File Properties," on page 53

Upload Media Files

You can upload media files to a catalog. Users with access to the catalog can use the media files to install applications on their virtual machines.

You are at least a catalog author.

Prerequisites

The computer from which you are uploading must have Java Plug-in 1.6.0_10 or later installed.

Procedure

1 Click **Catalogs > My Organization's Catalogs**.

2 On the **Media** tab, click the **Upload** button.

3 Type the path to the media file path or click **Browse**, locate the file, and click **Upload**.

4 Type a name and optional description for the media file.

This is the name that appears in vCloud Director.

5 Select the destination vDC and catalog.

6 Click **Upload**.

The media file is uploaded to the specified location. You can click the **Launch Uploads and Downloads Progress Window** button to track the progress.

Resume the Upload of a Media File

If you paused, cancelled, or interrupted the upload of a media file, you can resume it.

- You are at least a catalog author.
- If you log out of vCloud Director and log in, transfer history is lost. You cannot resume the upload.
- The default timeout for pending transfer sessions is one hour. You can configure this value.
- During pending or stopped transfers, the session keep alive heartbeat kicks in every 15 minutes. To ensure that the session does not time out while tasks are paused, make sure the session timeout value is more than 15 minutes.

Prerequisites

You have initiated the upload or download of a media file.

Procedure

1 In the **Launch the Uploads and Downloads Progress Window**, click **Pause**or **Cancel**.

The status changes to **Stopped** in the progress window and **Waiting** in the **Media Files** page.

2 In the **Launch the Uploads and Downloads Progress Window**, click **Resume**.

The upload or download process resumes.

3 Monitor the progress in the **Launch the Uploads and Downloads Progress** window.

Copy Media Files to a Catalog

You can copy media files to another catalog.

You are at least a catalog author.

Prerequisites

You have access to multiple vDCs.

Procedure

1 Click **Catalogs**.

2 On the **Media** tab, select a media file, right-click, and select **Copy To Catalog**.

3 Type a name and description.

4 Select the destination catalog and vDC.

5 Click **OK**.

The media file is copied to and stored in the selected catalog.

Move Media Files to Another Catalog

You can move media files to another catalog in your organization.

You are at least a catalog author.

Prerequisites

You have access to multiple catalogs and vDCs.

Procedure

1 Click **Catalogs**.

2 On the **Media** tab, select a media file, right-click, and select **Move To Catalog**.

3 Select a catalog and a vDC.

The catalog you select must be in your organization.

4 Click **OK**.

The media file is moved to the selected catalog.

Delete Media Files

You can delete media files from your catalog.

You are at least a catalog author.

Procedure

1 Click **Catalogs > My Organization's Catalogs**.

2 On the **Media** tab, select a media file, right-click, select **Delete**.

3 Click **Yes**.

The media file is deleted.

Modify Media File Properties

You can review and modify some properties of a media file.

You are at least a catalog author.

Procedure

1 Click **Catalogs > My Organization's Catalogs**.

2 On the **Media** tab, select a media file, right-click, and select **Properties**.

3 Modify the name or description.

4 Click **OK**.

Working with vApp Templates 7

A vApp template is a virtual machine image that is loaded with an operating system, applications, and data. These templates ensure that virtual machines are consistently configured across an entire organization.

This chapter includes the following topics:

- "Open a vApp Template," on page 55
- "Add a vApp Template to My Cloud," on page 56
- "Download a vApp Template," on page 56
- "Upload an OVF Package as a vApp Template," on page 57
- "Resume the Upload of a vApp Template," on page 57
- "Copy a vApp Template from a Public Catalog to an Organization Catalog," on page 58
- "Copy a vApp Template Between an Organization's Catalogs," on page 58
- "Move a vApp Template Between an Organization's Catalogs," on page 59
- "Delete a vApp Template," on page 59
- "Save a vApp as a vApp Template," on page 59
- "Modify vApp Template Properties," on page 60

Open a vApp Template

You can open a vApp template to learn more about the virtual machines that it contains.

You are at least a vApp user.

Procedure

1 Click **Catalogs**.

2 In the left pane, click on a catalog option.

- **My Organization's Catalogs**
- **Public Catalogs**

You can open vApp templates in your organization's catalogs or, if you are an organization administrator, from a public catalog.

3 On the **vApp Templates** tab, select a vApp template, right-click, and select **Open**.

Add a vApp Template to My Cloud

You can add a vApp template as a vApp from your catalog to **My Cloud**.

You are at least a vApp author.

If the vApp template is based on an OVF file that includes OVF properties for customizing its virtual machines, those properties are passed to the vApp. If any of those properties are user-configurable, you can specify the values.

Prerequisites

A vApp template is available in a published or a locally shared catalog.

Procedure

1 Click **Catalogs**.

2 In the left pane, click on a catalog option.

- **My Organization's Catalogs**
- **Public Catalogs**

You can access vApp templates in your organization's shared catalogs or, if you are an organization administrator, from a public catalog.

3 On the **vApp Templates** tab, select a vApp template, right-click, and select **Add to My Cloud**.

4 Type a name and optional description for the vApp.

5 Select a runtime and storage lease and click **Next**.

6 Select a virtual datacenter, configure the virtual machines in the vApp, and click **Next**.

7 Configure the custom properties, if any, and click **Next**.

8 Configure the networking options for the vApp and click **Next**.

9 Review the vApp summary information and click **Finish**.

vCloud Director creates a vApp on the **My Cloud > vApps** page.

Download a vApp Template

You can download a vApp template from a catalog locally as an OVF file.

You are at least a catalog author.

Prerequisites

The computer from which you are downloading must have Java Plug-in 1.6.0_10 or later installed.

Procedure

1 Click **Catalogs**.

2 In the left pane, click on a catalog option.

- **My Organization's Catalogs**
- **Public Catalogs**

You can download vApp templates from your organization's catalogs or, if you are an organization administrator, from a public catalog.

3 On the **vApp Templates** tab, select a vApp template, right-click, and select **Download**.

4 Navigate to the local folder where you want to save the OVF file and click **Save**.

You can click the **Launch Uploads and Downloads Progress Window** button from **My Organization's Catalogs** to track the progress.

Upload an OVF Package as a vApp Template

You can upload an OVF package from remote shares and your local directory to vCloud Director as a vApp template.

You are at least a catalog creator.

vCloud Director supports OVFs based on the Open Virtualization Format (OVF) Specification. If you upload an OVF file that includes OVF properties for customizing its virtual machines, those properties are preserved in the vApp template.

Prerequisites

- The computer from which you are uploading must have Java Plug-in 1.6.0_10 or later installed.
- For information about creating OVFs, see the *OVF Tool User Guide* and *VMware vCenter Converter 4.0.1 User's Guide*.
- vCloud Director does not support uploading compressed OVF files.

Procedure

1 Click **Catalogs > My Organization's Catalogs**.

2 On the **vApp Templates** tab, click the **Upload** button.

3 Type the name and path of the OVF file to upload, or click **Browse**, select the OVF file, and click **Upload**.

4 Type a name and optional description for the vApp template.

5 Select a destination vDC and catalog.

6 Click **Upload**.

You can click the **Launch Uploads and Downloads Progress Window** button to track the progress.

What to do next

Verify that VMware Tools is installed in each virtual machine in the vApp. See "Installing VMware Tools in a vApp," on page 95.

Resume the Upload of a vApp Template

If the upload process is interrupted, paused, or cancelled you can resume it.

- You are at least a catalog creator.
- If you log out of vCloud Director and log in, transfer history is lost. You cannot resume the upload.
- The default timeout for pending transfer sessions is one hour. You can configure this value up to one hour.
- During pending or stopped transfers, the session keep alive heartbeat kicks in every 15 minutes. To ensure that the session does not time out while tasks are paused, make sure the session timeout value is more than 15 minutes.

Prerequisites

You have initiated the upload or download of a vApp template.

Procedure

1 In the **Launch Uploads and Downloads Progress Window**, click **Pause**or **Cancel**.

The status changes to **Stopped** in the progress window and **Waiting** in the **vApp Template** page.

2 In the **Launch Uploads and Downloads Progress Window**, click **Resume**.

The upload or download process resumes.

3 Monitor the progress in the **Launch Uploads and Downloads Progress Window** .

Copy a vApp Template from a Public Catalog to an Organization Catalog

You can copy a vApp template from a public catalog to your organization catalog to make it available to users in your organization.

You are a vApp author or organization administrator.

Prerequisites

You have a catalog and vDC.

Procedure

1 Click **Catalogs**.

2 In the left pane, click **Public Catalogs**.

3 On the **vApp Templates** tab, select a vApp template, right-click, and select **Copy To Catalog**.

4 Type a name and optional description for the vApp.

5 Select a destination catalog and vDC.

Select a shared catalog to give organization users access to the template.

6 Click **OK**.

vCloud Director copies the vApp template to the organization catalog. The vApp appears on the **vApp Templates** tab in **My Organization's Catalogs**.

Copy a vApp Template Between an Organization's Catalogs

You can copy a vApp template from one catalog in your organization to another catalog in the same organization. This is useful if the catalogs are shared with different users and you want both groups of users to have access to the vApp template.

You are an organization administrator, catalog author, or vApp author.

Prerequisites

You must have access to at least two catalogs and a vDC with available space.

Procedure

1 Click **Catalogs > My Organization's Catalogs**.

2 On the **vApp Templates** tab, right-click a vApp template and select **Copy to Catalog**.

3 Type a name and optional description for the vApp template.

4 Select the destination catalog and vDC.

If you select a published catalog, the vApp template will be available to all organizations in the vCloud Director installation.

5 Click **OK**.

Move a vApp Template Between an Organization's Catalogs

You can move a vApp template from one catalog in your organization to another catalog in the same organization. This is useful if you want to move a template from a published catalog to an unpublished catalog or the reverse.

You are an organization administrator or catalog author.

Prerequisites

You must have access to at least two catalogs and a vDC with available space.

Procedure

1 Click **Catalogs > My Organization's Catalogs**.

2 On the **vApp Templates** tab, right-click a vApp template and select **Move To Catalog**.

3 Select a destination catalog and vDC.

If you select a published catalog, the vApp template will be available to all organizations in the vCloud Director installation.

4 Click **OK**.

vCloud Director copies the source vApp template to the destination catalog and then deletes the source vApp template.

Delete a vApp Template

You can delete a vApp template from an organization catalog. If the catalog is published, the vApp template is also deleted from **Public Catalogs**.

You are at least a vApp author.

Procedure

1 Click **Catalogs > My Organization's Catalogs**.

2 On the **vApp Templates** tab, select a vApp template, right-click, and select **Delete**.

3 Click **Yes**.

The selected vApp is deleted.

Save a vApp as a vApp Template

You can save a vApp to a catalog as a vApp template.

You are at least a vApp author.

Prerequisites

- Your organization has a catalog and a vDC with available space.
- The vApp must be stopped.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **vApps**.

3 Right-click a vApp and select **Add to Catalog**.

4 Type a name and optional description for the vApp template.

5 Select a vDC, a catalog, and a storage lease.

6 Select a vApp creation option.

This option applies when creating a vApp based on this template. It is ignored when building a vApp using individual virtual machines from this template.

Option	Description
Make identical copy	vApps that are created from this vApp template must follow the guest operating system settings of the vApp template. If you select this option, and guest customization is enabled, the guest operating system is personalized.
Customize VM settings	Guest operating system is personalized regardless of the vApp template settings, and the guest operating system is personalized when the vApp is deployed. This option requires that a supported version of VMware Tools be installed on all virtual machines in the vApp.

7 Click **OK**.

The vApp is saved as a vApp template and appears in the destination catalog.

Modify vApp Template Properties

You can modify some basic properties of a vApp template. To make more advanced changes to a vApp template, add it to **My Cloud**, make the changes, then add it back to the catalog as a new vApp template.

You are an organization administrator.

Procedure

1 Click **Catalogs > My Organization's Catalogs**.

2 On the **vApp Templates** tab, right-click a vApp template and select **Properties**.

3 On the **General** tab, modify the vApp template name and description.

4 Select a vApp creation option.

This option applies when creating a vApp based on this template. It is ignored when building a vApp using individual virtual machines from this template.

Option	Description
Make identical copy	vApps that are created from this vApp template must follow the guest operating system settings of the vApp template. If you select this option, and guest customization is enabled, the guest operating system is personalized.
Customize VM settings	Guest operating system is personalized regardless of the vApp template settings, and the guest operating system is personalized when the vApp is deployed. This option requires that a supported version of VMware Tools be installed on all virtual machines in the vApp.

5 Choose whether or not to mark the vApp template as a Gold Master in the catalog.

If you mark a vApp template as a Gold Master, this information appears in the list of vApp templates.

6 To reset the vApp template storage lease, select the **Reset lease** check box and select a new storage lease.

7 Click **OK**.

Working with vApps

8

A vApp consists of one or more virtual machines that communicate over a network and use resources and services in a deployed environment. A vApp can contain multiple virtual machines.

This chapter includes the following topics:

- "Create a vApp From a vApp Template," on page 62
- "Create a New vApp," on page 62
- "Copy a vApp," on page 64
- "Start a vApp," on page 64
- "Start a vApp with an Older Version of VMware Tools," on page 64
- "Stop a vApp," on page 65
- "Suspend a vApp," on page 65
- "Discard the Suspended State of a vApp," on page 65
- "Reset a vApp or Virtual Machine," on page 66
- "View vApp Virtual Machines," on page 66
- "Add Virtual Machines to a vApp," on page 66
- "Remove Virtual Machines from a vApp," on page 67
- "Set vApp Start and Stop Options," on page 67
- "Working with Networks in a vApp," on page 68
- "Display a vApp Diagram," on page 78
- "Modify a vApp Name and Description," on page 78
- "Modify vApp OVF Environment Properties," on page 79
- "Reset vApp Leases," on page 79
- "Share a vApp," on page 79
- "Change the Owner of a vApp," on page 80
- "Upgrade the Virtual Hardware Version for a vApp," on page 80
- "Save vApp as a vApp Template to Your Catalog," on page 81
- "Copy a vApp to Another vDC," on page 81
- "Move a vApp to Another vDC," on page 81

- "Delete a vApp," on page 82

Create a vApp From a vApp Template

You can create a new vApp based on a vApp template stored in a catalog to which you have access.

- Only organization administrators and vApp authors can access vApp templates in public catalogs.
- vApp users and above can access vApp templates in organization catalogs shared to them.

If the vApp template is based on an OVF file that includes OVF properties for customizing its virtual machines, those properties are passed to the vApp. If any of those properties are user-configurable, you can specify the values.

Procedure

1 Click **My Cloud > vApps**.

2 Click the **Add vApp from Catalog** button.

3 Select **My organization's catalogs** or **Public catalogs** from the drop-down menu.

4 Select a vApp template and click **Next**.

5 Type a name and optional description for the vApp.

6 Select a runtime and storage lease and click **Next**.

7 Select a virtual datacenter, configure the virtual machines in the vApp, and click **Next**.

8 Configure the custom properties, if any, and click **Next**.

9 Configure the networking options for the vApp and click **Next**.

10 Review the vApp summary information and click **Finish**.

vCloud Director creates a vApp in **My Cloud**.

Create a New vApp

If you don't want to create a vApp based on a vApp template, you can create a new vApp using virtual machines from vApp templates, new virtual machines, or a combination of both.

You are at least a vApp author.

Procedure

1 Complete the vApp Profile on page 63

When you create a new vApp, you must provide some basic information.

2 Add Virtual Machines to the vApp on page 63

You can search your catalogs for virtual machines to add to the vApp or add new, blank virtual machines.

3 Configure the Virtual Machines on page 63

Select the virtual datacenter (vDC) in which this vApp is stored and runs when it's started. Name each virtual machine and select the network to which you want it to connect. You can configure additional properties for virtual machines after you complete the wizard.

4 Configure Networks on page 63

You can determine how the vApp, its virtual machines, and its networks connect to the organization's networks.

Complete the vApp Profile

When you create a new vApp, you must provide some basic information.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **vApps** and click the **Build New vApp** button.

3 Type a name and optional description.

4 Select a runtime and storage lease and click **Next**.

Add Virtual Machines to the vApp

You can search your catalogs for virtual machines to add to the vApp or add new, blank virtual machines.

You must be an organization administrator or vApp author to access public catalogs.

Procedure

1 To add virtual machines from vApp templates, select **My organization's catalogs** or **Public catalogs** from the drop-down menu, select one or more virtual machines, and click **Add**.

2 To add a new virtual machine, click **New Virtual Machine**, provide the required information about the virtual machine, and click **OK**.

After you finish creating the new vApp, you can power on the new virtual machine and install an operating system.

3 Click **Next**.

Configure the Virtual Machines

Select the virtual datacenter (vDC) in which this vApp is stored and runs when it's started. Name each virtual machine and select the network to which you want it to connect. You can configure additional properties for virtual machines after you complete the wizard.

Procedure

1 Select a vDC.

2 (Optional) Modify the full name and computer name of each virtual machine.

3 Select a primary NIC and network for each virtual machine.

4 Select an IP assignment method for each NIC.

If you select **Static - Manual**, type the IP address.

5 Click **Next**.

Configure Networks

You can determine how the vApp, its virtual machines, and its networks connect to the organization's networks.

Procedure

1 Select **Show networking details**.

2 Review the network information.

3 Click **Next**.

4 Review the summary for the vApp.

5 Click **Finish**.

Copy a vApp

To create a new vApp based on an existing vApp, you can copy a vApp and modify the copy to meet your needs.

You are at least a vApp user.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **vApps**.

3 Select a vApp, right-click, and select **Copy to**.

4 Type a name and optional description.

5 Select a vDC.

6 Click **OK**.

What to do next

Modify the contents and properties of the new vApp.

Start a vApp

Starting a vApp powers on all the virtual machines in the vApp that are not already powered on.

You are at least a vApp author.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **vApps**.

3 Select a vApp, right click, and select **Start**.

Start a vApp with an Older Version of VMware Tools

If a virtual machine in a vApp has an older version of VMware Tools installed and is enabled for guest customization, you might not be able to start it.

Procedure

1 Click **My Cloud**.

2 In the left pane, select **vApps**.

3 Select a vApp, right-click, and select **Open**.

4 Select a virtual machine, right-click, and select **Properties**.

5 On the **Guest OS Customization** tab, deselect the **Enable Guest Customization** check box and click **OK**.

6 (Optional) Repeat this step for all your virtual machines.

7 Select the vApp, right-click, and select **Start**.

Stop a vApp

Stopping a vApp powers off or shuts down all the virtual machines in the vApp. You must stop a vApp before you can perform certain actions. For example, adding it to a catalog, copying it, moving it, and so on.

You can specify whether stopping a vApp powers off or shuts down its virtual machines in the vApp properties page.

Prerequisites

The vApp must be started.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **vApps**.

3 Select a vApp, right-click, and select **Stop**.

4 Click **OK**.

Suspend a vApp

You can suspend a vApp to save its current state.

Prerequisites

The vApp is running.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **vApps**.

3 Select a vApp, right-click, and select **Suspend**.

The vApp is stopped and is labeled as **Stopped**.

Discard the Suspended State of a vApp

You can discard the suspended state of a vApp.

Prerequisites

The vApp must be stopped and in a suspended state.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **vApps**.

3 Select a vApp, right-click, and select **Discard Suspended State**.

4 Click **Yes**.

Reset a vApp or Virtual Machine

Resetting a virtual machine clears state (memory, cache, and so on), but the vApps and virtual machines continue to run.

Prerequisites

Your vApp is started and virtual machine is powered on.

Procedure

1 Click **My Cloud**.

2 In the left pane, select **vApps** or **VMs**.

3 Select a vApp or virtual machine, right-click, and select **Reset**.

View vApp Virtual Machines

You can access and display the virtual machines in a vApp.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **vApps**.

3 Select a vApp, right-click, and select **Open**.

4 Click on the **Virtual Machines** tab.

Add Virtual Machines to a vApp

You can add virtual machines to a vApp.

You must be an organization administrator or vApp author to access virtual machines in public catalogs.

If the virtual machine is based on an OVF file that includes OVF properties for customization, those properties are retained in the vApp. If any of those properties are user-configurable, you can specify the values in the virtual machine's properties pane after you add it to the vApp.

For information about supported network adapter types, see http://kb.vmware.com/kb/1001805.

Procedure

1 Click the **My Cloud** tab and click **vApps** in the left pane.

2 Right-click the vApp and select **Open**.

3 On the **Virtual Machines** tab, click the **Add VM** button.

4 To add virtual machines from vApp templates, select **My organization's catalogs** or **Public catalogs** from the drop-down menu, select one or more virtual machines, and click **Add**.

5 To add a new virtual machine, click **New Virtual Machine**, provide the required information about the virtual machine, and click **OK**.

After you finish creating the new vApp, you can power on the new virtual machine and install an operating system.

6 Click **Next**.

7 (Optional) Modify the full name and computer name of each virtual machine.

8 Select a primary NIC and network for each virtual machine.

9 (Optional) Select **Show network adapter type** and select a type for each NIC.

10 Select an IP assignment method for each NIC.

If you select **Static - Manual**, type the IP address.

11 Click **Next**.

12 Select **Show networking details**, review the network information, and click **Next**.

13 Review the summary for the vApp and click **Finish**.

Remove Virtual Machines from a vApp

You can remove virtual machines from a vApp.

You are at least a vApp author.

Prerequisites

The virtual machine is powered off.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **vApps**.

3 Select a vApp, right-click, and select **Open**.

4 On the **Virtual Machines** tab, select a virtual machine, right-click and select **Delete**.

5 Click **Yes**.

Set vApp Start and Stop Options

You can specify certain options that affect what happens to the virtual machines when a vApp is started and stopped.

You are at least a vApp user.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **vApps**.

3 Select a vApp, right-click, and select **Properties**.

4 On the **Starting and Stopping VMs** tab, specify the options.

Option	Description
Order	For vApps with multiple virtual machines, you can specify the order in which the machines start and stop by typing numbers in the text box. Virtual machines with lower numbers start first. You cannot enter negative numbers.
Start Action	Determines what happens to virtual machines when you start the vApp that contains them. By default, this option is set to **Power On**.
Start Delay	How many seconds to wait between when you start a vApp and when vCloud Director powers on each virtual machine.
Stop Action	Determines what happens to virtual machines when you stop the vApp that contains them. By default, this option is set to **Power Off**, but you can also set it to **Shutdown**.
Stop Delay	How many seconds to wait between when you stop a vApp and when vCloud Director powers off or shuts down each virtual machine.

5 Click **OK**.

Working with Networks in a vApp

The virtual machines in a vApp can connect to vApp networks (isolated or routed) and organization networks (direct or fenced). You can add networks of different types to a vApp to address multiple networking scenarios.

Select the **Networking** tab in a vApp and select the **Show networking details** check box to view a list of the networks that are available to the vApp. Virtual machines in the vApp can connect to these networks. If you want to connect a virtual machine to a different network, you must first add it to the vApp.

A vApp can include vApp networks and organization networks. A vApp network can be isolated by selecting **None** in the **Connection** drop-down menu. An isolated vApp network is totally contained within the vApp. You can also route a vApp network to an organization network to provide connectivity to virtual machines outside of the vApp. For routed vApp networks, you can configure network services, such as a firewall and static routing.

You can connect a vApp directly to an organization network. If you have multiple vApps that contain identical virtual machines connected to the same organization network and you want to start the vApps at the same time, you can fence the vApp. This allows you to power on the virtual machines without conflict, by isolating their MAC and IP addresses.

View vApp Networks

You can access and display the networks in a vApp.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **vApps**.

3 Select a vApp, right-click, and select **Open**.

4 Click on the **Networking** tab.

5 Select the **Show networking details** to display details about each network.

Add a vApp Network to a vApp

Add a vApp network to a vApp to make the network available to virtual machines in the vApp.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **vApps**, right-click, and select **Open**.

3 On the **Networking** tab, select the **Show networking details** check box.

4 Click the **Add Network** button.

5 Select **vApp Network** and click **Next**.

6 Type the network specifications and click **Next**.

7 Type a network name and optional description and click **Next**.

8 Review your vApp network settings and click **Finish**.

vCloud Director creates an isolated vApp network and displays it in the network list.

9 (Optional) Select an organization network in the **Connection** drop-down menu.

This routes the vApp network to the organization network.

10 Click **Apply**.

What to do next

Connect a virtual machine in the vApp to the network.

Add an Organization Network to a vApp

Add an organization network to a vApp to make the network available to virtual machines in the vApp.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **vApps**, right-click, and select **Open**.

3 On the **Networking** tab, select the **Show networking details** check box.

4 Click the **Add Network** button.

5 Select **Organization Network** and click **Next**.

6 Select an organization network and click **Finish**.

vCloud Director adds the organization network and displays it in the network list.

7 (Optional) Select the **Fence vApp** check box.

This changes the connection from **Direct** to **Fenced** for all organization networks in the vApp. Fencing allows identical virtual machines in different vApps to be powered on without conflict by isolating the MAC and IP addresses of the virtual machines.

8 Click **Apply**.

What to do next

Connect a virtual machine in the vApp to the network.

Configuring Network Services for a vApp Network

You can configure network services, such as DHCP, firewalls, network address translation (NAT), and static routing for certain vApp networks.

The network services available depend on the type of vApp network.

Table 8-1. Network Services Available by Network Type

vApp Network Type	DHCP	Firewall	NAT	Static Routing
Direct				
Routed	X	X	X	X
Isolated	X			

Configure DHCP for an vApp Network

You can configure certain vApp networks to provide DHCP services to virtual machines in the vApp.

When you enable DHCP for a vApp network, connect a NIC on virtual machine in the vApp to that network, and select **DHCP** as the IP mode for that NIC, vCloud Director assigns a DHCP IP address to the virtual machine when you power it on.

Prerequisites

A routed vApp network or an isolated vApp network.

Procedure

1 Click the **My Cloud** tab and click **vApps** in the left pane.

2 Right-click a vApp and select **Open**.

3 On the **Networking** tab, select **Show networking details**.

4 Right-click the vApp network and select **Configure Services**.

5 Click the **DHCP** tab and select **Enable DHCP**.

6 Type a range of IP addresses or use the default range.

vCloud Director uses these addresses to satisfy DHCP requests. The range of DHCP IP addresses cannot overlap with the static IP pool for the vApp network.

7 Set the default lease time and maximum lease time or use the default values and click **OK**.

8 Click **Apply**.

vCloud Director updates the network to provide DHCP services.

Enable the Firewall for a vApp Network

You can configure certain vApp networks to provide firewall services. Enable the firewall on a vApp network to enforce firewall rules on incoming traffic, outgoing traffic, or both.

When you enable the firewall, you can specify a default firewall action to deny all incoming and outgoing traffic or to allow all incoming and outgoing traffic. You can also add specific firewall rules to allow or deny traffic that matches the rules to pass through the firewall. These rules take precedence over the default firewall action. See "Add a Firewall Rule to a vApp Network," on page 71.

If a system administrator specified syslog server settings and those settings have been applied to the vApp network, then you can log events related to the default firewall action. For information about applying syslog server settings, see "Apply Syslog Server Settings to a vApp Network," on page 78. To view the current syslog server settings see "View Syslog Server Settings for a vApp Network," on page 77.

Prerequisites

A routed vApp network.

Procedure

1 Click the **My Cloud** tab and click **vApps** in the left pane.

2 Right-click a vApp and select **Open**.

3 On the **Networking** tab, select **Show networking details**.

4 Right-click the vApp network and select **Configure Services**.

5 Click the **Firewall** tab and select **Enable firewall**.

6 Select the default firewall action.

7 (Optional) Select the **Log** check box to log events related to the default firewall action.

8 Click **OK**.

9 Click **Apply**.

Add a Firewall Rule to a vApp Network

You can add firewall rules to a vApp network that supports a firewall. You can create rules to allow or deny traffic that matches the rules to pass through the firewall.

In order for a firewall rule to be enforced, you must enable the firewall for the vApp network. See "Enable the Firewall for a vApp Network," on page 70.

When you add a new firewall rule to a vApp network, it appears at the bottom of the firewall rule list. See "Reorder Firewall Rules for a vApp Network," on page 72 for information about setting the order in which firewall rules are enforced.

If a system administrator specified syslog server settings and those settings have been applied to the vApp network, then you can log firewall rule events. For information about applying syslog server settings, see "Apply Syslog Server Settings to a vApp Network," on page 78. To view the current syslog server settings see "View Syslog Server Settings for a vApp Network," on page 77.

Prerequisites

A routed vApp network.

Procedure

1 Click the **My Cloud** tab and click **vApps** in the left pane.

2 Right-click a vApp and select **Open**.

3 On the **Networking** tab, select **Show networking details**.

4 Right-click the vApp network and select **Configure Services**.

5 Click the **Firewall** tab and click **Add**.

6 Type a name for the rule.

7 Select the traffic direction.

8 Type the source IP address and select the source port.

   For incoming traffic, the source is the organization network. For outgoing traffic, the source is the vApp network.

9 Type the destination IP and select the destination port.

   For incoming traffic, the destination is the vApp network. For outgoing traffic, the destination is the organization network.

10 Select the protocol.

11 Select the action.

   A firewall rule can allow or deny traffic that matches the rule.

12 Select the **Enabled** check box.

13 (Optional) Select the **Log network traffic for firewall rule** check box.

   If you enable this option, vCloud Director sends log events to the syslog server for connections affected by this rule.

14 Click **OK** and **OK**.

15 Click **Apply**.

Reorder Firewall Rules for a vApp Network

Firewall rules are enforced in the order in which they appear in the firewall list. You can change the order of the rules in the list.

When you add a new firewall rule to a vApp network, it appears at the bottom of the firewall rule list. If you want to enforce the new rule before an existing rule, reorder the rules.

Prerequisites

A routed vApp network with two or more firewall rules.

Procedure

1 Click the **My Cloud** tab and click **vApps** in the left pane.

2 Right-click a vApp and select **Open**.

3 On the **Networking** tab, select **Show networking details**.

4 Right-click the vApp network and select **Configure Services**.

5 Click the **Firewall** tab.

6 Drag and drop the firewall rules to establish the order in which the rules are applied.

7 Click **OK**.

8 Click **Apply**.

Enable IP Masquerading for a vApp Network

You can configure certain vApp networks to provide IP masquerade services. Enable IP masquerading on a vApp network to hide the internal IP addresses of virtual machines from the organization network.

When you enable IP masquerade, vCloud Director translates a virtual machine's private, internal IP address into a public IP address for outbound traffic.

Prerequisites

A routed vApp network.

Procedure

1 Click the **My Cloud** tab and click **vApps** in the left pane.

2 Right-click a vApp and select **Open**.

3 On the **Networking** tab, select **Show networking details**.

4 Right-click the vApp network and select **Configure Services**.

5 Click the **NAT** tab and select **Port Forwarding**.

6 Select **Enable IP Masquerade** and click **OK**.

7 Click **Apply**.

Add a Port Forwarding Rule to a vApp Network

You can configure certain vApp networks to provide port forwarding by adding a NAT mapping rule. Port forwarding provides external access to services running on virtual machines on the vApp network.

When you configure port forwarding, vCloud Director maps an external port to a service running on a port on a virtual machine for inbound traffic.

When you add a new port forwarding rule to a vApp network, it appears at the bottom of the NAT mapping rule list. For information about how to set the order in which port forwarding rules are enforced, see "Reorder Port Forwarding Rules for a vApp Network," on page 74.

Prerequisites

A routed vApp network.

Procedure

1 Click the **My Cloud** tab and click **vApps** in the left pane.

2 Right-click a vApp and select **Open**.

3 On the **Networking** tab, select **Show networking details**.

4 Right-click the vApp network and select **Configure Services**.

5 Click the **NAT** tab, select **Port Forwarding**, and click **Add**.

6 Configure the port forwarding rule.

   a Select an external port.

   b Select an internal port.

   c Select a protocol for the type of traffic to forward.

   d Select a VM interface.

   e Click **OK**.

7 Click **OK**.

8 Click **Apply**.

Add an IP Translation Rule to a vApp Network

You can configure certain vApp networks to provide IP translation by adding a NAT mapping rule.

When you create an IP translation rule for a network, vCloud Director adds a DNAT and SNAT rule to the vShield Edge associated with the network's port group. The DNAT rule translates an external IP address to an internal IP address for inbound traffic. The SNAT rule translates an internal IP address to an external IP address for outbound traffic. If the network is also using IP masquerade, the SNAT rule takes precedence.

Prerequisites

A routed vApp network.

Procedure

1 Click the **My Cloud** tab and click **vApps** in the left pane.

2 Right-click a vApp and select **Open**.

3 On the **Networking** tab, select **Show networking details**.

4 Right-click the vApp network and select **Configure Services**.

5 Click the **NAT** tab, select **IP Translation**, and click **Add**.

6 Select a VM interface and mapping mode and click **OK**.

   For **Manual** mapping mode, type an external IP address.

7 Click **OK**.

8 Click **Apply**.

Reorder Port Forwarding Rules for a vApp Network

Port forwarding rules are enforced in the order in which they appear in the NAT mapping list. You can change the order of the rules in the list.

When you add a new port forwarding rule to a vApp network, it appears at the bottom of the NAT mapping rule list. To enforce the new rule before an existing rule, reorder the rules.

Prerequisites

A routed vApp network with two or more port forwarding rules.

Procedure

1 Click the **My Cloud** tab and click **vApps** in the left pane.

2 Right-click a vApp and select **Open**.

3 On the **Networking** tab, select **Show networking details** and click **Details**.

4 On the **NAT** tab, click and drag the rules to establish the order in which the rules are applied and click **OK**.

5 Click **Apply**.

Enable Static Routing for a vApp Network

You can configure certain vApp networks to provide static routing services. After you enable static routing on two or more vApp networks, you can add static routes to allow virtual machines on different vApp networks to communicate.

To route traffic between two vApp networks, you must enable static routing on both networks.

Prerequisites

A routed vApp network.

Procedure

1 Click the **My Cloud** tab and click **vApps** in the left pane.

2 Right-click a vApp and select **Open**.

3 On the **Networking** tab, select **Show networking details**.

4 Right-click the vApp network and select **Configure Services**.

5 On the **Static Routing** tab, select **Enable static routing** and click **OK**.

6 Click **Apply**.

What to do next

Enable static routing on another vApp network and create static routes between the two vApp networks.

Add Static Routes to vApp Networks

You can add static routes between two vApp networks that are routed to the same organization network. Static routes allow traffic between the networks.

You cannot add static routes to a fenced vApp or between overlapping networks. After you add a static route to a vApp network, configure the network firewall rules to allow traffic on the static route. For vApps with static routes, you should select the **Always use assigned IP addresses until this vApp or associated networks are deleted** check box.

Static routes only function when the vApps containing the routes are running. If you change the parent network of a vApp, delete a vApp, or delete a vApp network, and the vApp includes static routes, those routes cannot function and you must remove them manually.

Prerequisites

- vShield 5.0.
- Two vApp networks routed to the same organization network.
- The vApp networks are in vApps that were started at least once.
- Static routing is enabled on both vApp networks.

Procedure

1 Click the **My Cloud** tab and click **vApps** in the left pane.

2 Right-click the first vApp and select **Open**.

3 On the **Networking** tab, select **Show networking details**.

4 Right-click the vApp network and select **Configure Services**.

5 On the **Static Routing** tab, click **Add**.

6 Type a name, network address, and next hop IP and click **OK**.

The network address is for the vApp network to which you want to add a static route. The next hop IP is the external IP address of that vApp network's router.

7 Click **OK**.

8 Click **Apply**.

9 Repeat Step 2 through Step 8 for the second vApp network.

Example: Static Routing Example

vApp Network 1 and vApp Network 2 are both routed to Org Network Shared. You can create a static route on each vApp network to allow traffic between the networks. You can use information about the vApp networks to create the static routes.

Table 8-2. Network Information

Network Name	Network Specification	Router External IP Address
vApp Network 1	192.168.1.0/24	192.168.0.100
vApp Network 2	192.168.2.0/24	192.168.0.101
Org Network Shared	192.168.0.0/24	NA

On vApp Network 1, create a static route to vApp Network 2. On vApp Network 2, create a static route to vApp Network 1.

Table 8-3. Static Routing Settings

vApp Network	Route Name	Network	Next Hop IP Address
vApp Network 1	tovapp2	192.168.2.0/24	192.168.0.101
vApp Network 2	tovapp1	192.168.1.0/24	192.168.0.100

What to do next

Create firewall rules for the vApp networks to allow traffic on the static routes.

Reset Your vApp Network

If the network services, such as DHCP settings, firewall settings, and so on, that are associated with a vApp network are not working as expected, an organization administrator can reset the network. Network services are not available during the reset.

Prerequisites

The vApp is running.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **vApps**.

3 Select a vApp, right-click, and select **Open**.

4 On the **Networking** tab, select the **Show networking details** check box.

5 Select a vApp network, right-click, and select **Reset Network**.

6 Click **Yes**.

Delete a vApp Network

If you no longer need a network in your vApp, you can delete the network.

Prerequisites

The vApp is stopped and no virtual machines in the vApp are connected to the network.

Procedure

1 Click **My Cloud**.

2 In the left pane, select**vApps**.

3 Select a vApp, right-click, and select **Open**.

4 On the **Networking** tab, select the **Show networking details** check box.

5 Right-click a network in the list and select **Delete**.

6 Click **Apply**.

Modify Network Properties

You can modify the properties of the networks in a vApp.

Procedure

1 Select **Administration**.

2 Select **Cloud Resources > Networks**.

3 Select a network, right-click, and select **Properties**.

You can modify the name, description, and portions of the network specification.

4 Modify the relevant properties and click **OK**.

5 Click **Apply**.

Display the IP Allocations for Your vApp Network

You can review the IP allocations for the networks in your vApp.

Procedure

1 Click **My Cloud**.

2 In the left pane, select**vApps**.

3 Select a vApp, right-click, and select **Open**.

4 On the **Networking** tab, select the **Show networking details**check box.

5 Select a network, right-click, and select **IP Allocations**.

6 Review your allocations and click **OK**.

Configure IP Address Persistence

By default, when you stop a running vApp or power off a virtual machine, vCloud Director releases any IP and MAC addresses the virtual machines were using. You can configure a vApp to retain the network addresses of its virtual machines until the vApp, VM, or network is deleted.

Static routing relies on the IP addresses of the virtual machines and virtual routers in a vApp. For vApps that use static routing, enable IP persistence to make sure that static routes to and from the vApp remain valid.

Procedure

1 Click **My Cloud**.

2 In the left pane, select**vApps**.

3 Select a vApp, right-click, and select **Open**.

4 On the **Networking** tab, select the **Always use assigned IP addresses...**check box and click **Apply**.

The virtual machines in the vApp keep their assigned IP and MAC addresses, even when they are powered off.

View Syslog Server Settings for a vApp Network

You can view the syslog server settings for a routed vApp network.

vCloud Director supports logging events related to firewall rules to a syslog server specified by a system administrator.

If a vApp network does not have any syslog server settings and you think it should, or if the settings are not what you expected, then you can synchronize the network with the most current syslog server settings. See "Apply Syslog Server Settings to a vApp Network," on page 78. If there is still a problem after you synchronize, contact your system administrator.

Prerequisites

A routed vApp network.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **vApps**.

3 Select a vApp, right-click, and select **Open**.

4 On the **Networking** tab, select a vApp network, right-click, and select **Properties**.

5 Click the **Syslog Server Settings** tab.

Apply Syslog Server Settings to a vApp Network

You apply syslog server settings to a routed vApp network to enable firewall rule logging.

Syslog server settings can only be specified by a system administrator. You should apply those settings to any vApp network that was created before the system administrator specified them. You should also apply the syslog server settings to a vApp network any time a system administrator changes the settings.

Prerequisites

A routed vApp network.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **vApps**.

3 Select a vApp, right-click, and select **Open**.

4 On the **Networking** tab, select a vApp network, right-click, and select **Synchronize syslog server settings**.

5 Click **Yes**.

Display a vApp Diagram

A vApp diagram provides a graphical view of the virtual machines and networks in a vApp.

Procedure

1 Click **My Cloud**.

2 On the **vApps** page, select a vApp, right-click, and select **Open**.

3 Click the **vApp Diagram** tab.

The vApp diagram is displayed.

What to do next

You can perform most of the same operations from this tab that you can from the **Virtual Machines** and **Networking** tabs.

Modify a vApp Name and Description

You can change the name and description associated with a vApp to make it more meaningful.

You are at least a vApp user.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **vApps**.

3 Select a vApp, right-click, and select **Properties**.

4 On the **General** tab, modify the vApp name and description and click **OK**.

Modify vApp OVF Environment Properties

If a vApp includes user-configurable OVF environment properties, you can review and modify those properties.

If a virtual machine in the vApp includes a value for a user-configurable property of the same name, the virtual machine value takes precedence.

Prerequisites

The vApp is stopped and its OVF environment includes user-configurable properties.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **vApps**.

3 Select a vApp, right-click, and select **Properties**.

4 On the **Custom Properties** tab, modify the properties and click **OK**.

Reset vApp Leases

You can reset the runtime and storage leases for a vApp.

You are at least a vApp user.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **vApps**.

3 Select a vApp, right-click, and select **Properties**.

4 On the **General** tab, select the **Reset leases** check box, select a runtime and storage lease, and click **OK**.

Share a vApp

You can share your vApps with other groups or users in your organization. The access controls you set determine the operations that can be completed on the shared vApps.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **vApps**.

3 Select a vApp, right-click, and select **Share**.

4 Click **Add Members**.

5 Select the users with whom you want to share the vApp.

Option	Action
Everyone in the organization	Select this option.
Specific users and group	Select this option, select the users and groups, and click **Add**.

6 Select an access level for the users and groups.

Option	Description
Full control	Users can open, start, save a vApp as a vApp template (**Add to Catalog**), change the owner, copy to a catalog, and modify properties.
Read/write	Users can open, start, save a vApp as a vApp template (**Add to Catalog**), copy to catalog, and modify properties.
Read only	Users only have read access to a vApp.

7 Click **OK**.

Your vApp is shared with the specified users or groups.

Change the Owner of a vApp

You can change the owner of the vApp, for example, if a vApp owner leaves the company or changes roles within the company.

You are an organization administrator.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **vApps**.

3 Select a vApp, right-click, and select **Change Owner**.

4 Search for a user or select one from the list.

You can search by user name or full name.

5 Click **OK**.

The new owner's name appears in the **Owner** column on the **vApp** page.

Upgrade the Virtual Hardware Version for a vApp

You can upgrade the virtual hardware version for all the virtual machines in a vApp. Higher virtual hardware versions support more features.

vCloud Director supports hardware version 4, hardware version 7, and hardware version 8 virtual machines depending on the resources backing the organization's virtual datacenters.

You cannot downgrade the hardware version of the virtual machines in a vApp.

Prerequisites

The vApp must be stopped and its virtual machines must have the latest version of VMware Tools installed.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **vApps**.

3 Select a vApp, right-click, and select **Upgrade Virtual Hardware Version**.

4 Click **Yes**.

Save vApp as a vApp Template to Your Catalog

You can save a vApp as a vApp template and add it to the catalog.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **vApps**.

3 Select a vApp, right-click, and select **Add to Catalog**.

4 (Optional) Modify the name and description.

5 Select the destination vDC and catalog.

6 In the **Storage lease:** drop-down menu, select when you would like the vApp template to expire.

7 Select an option.

Option	Description
Make Identical Copy	vApps that are created from this vApp template must follow the guest operating system settings of the vApp template. If you select this option, and guest customization is enabled, the guest operating system is personalized.
Customize VM Settings	Guest operating system is personalized regardless of the vApp template settings, and the guest operating system is personalized when the vApp is deployed.

8 Click **OK**.

The vApp is saved as a vApp template in the selected catalog.

Copy a vApp to Another vDC

When you copy a vApp to another vDC, the original vApp remains in the source vDC.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **vApps**.

3 Select a vApp, right-click, and select **Copy to**.

4 Type a name and description.

5 Select a vDC.

6 Click **OK**.

The new vDC for this vApp appears in the **vDC** column on the **vApps**page.

Move a vApp to Another vDC

When you move a vApp to another vDC, the vApp is removed from the source vDC.

You are at least a vApp author.

Prerequisites

Your vApp is stopped.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **vApps**.

3 Select a vApp, right-click, and select **Move to**.

4 Select a **vDC**.

5 Click **OK**.

Delete a vApp

You can delete a vApp, which removes it from your organization.

You must be at least a vApp author.

Prerequisites

Your vApp must be stopped.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **vApps**.

3 Select a vApp, right-click, and select **Delete**.

4 Click **Yes**.

Working with Virtual Machines 9

Virtual machines have a guest operating system on which you can install and run any software supported by that operating system. In vCloud Director, you can install VMware Tools, insert DVDs and floppy disks, and remotely connect to virtual machines.

These are the most basic operations that you can do on a virtual machine.

- **Power On**, which is equal to powering on a physical machine.
- **Power Off**, which is equal to powering off a physical machine.
- **Suspend**, where the CPU of a deployed virtual machine is frozen. You can suspend a machine when you need to leave a virtual machine but do not want to lose its current state.
- **Reset**, which power cycles the virtual machine.

This chapter includes the following topics:

- "Open a Virtual Machine Console," on page 84
- "Power On a Virtual Machine," on page 84
- "Power Off a Virtual Machine," on page 84
- "Reset a vApp or Virtual Machine," on page 85
- "Suspend a Virtual Machine," on page 85
- "Resume a Suspended Virtual Machine," on page 85
- "Discard the Suspended State of a Virtual Machine," on page 85
- "Insert a CD/DVD," on page 86
- "Eject a CD/DVD," on page 86
- "Insert a Floppy," on page 86
- "Eject a Floppy," on page 86
- "Upgrade the Virtual Hardware Version for a Virtual Machine," on page 87
- "Connect Remotely to a Virtual Machine," on page 87
- "Copy or Move a Virtual Machine to a vApp," on page 87
- "Delete a Virtual Machine," on page 88
- "Modify Virtual Machine General Properties," on page 88
- "Modify Virtual Machine CPUs and Memory," on page 89
- "Modify Virtual Machine OVF Environment Properties," on page 89

- "Configuring Virtual Machine Resource Allocation Settings," on page 90
- "Modifying Virtual Machine Hard Disks," on page 91
- "Modifying Virtual Machine Network Interfaces," on page 92
- "Installing VMware Tools," on page 94
- "Guest Operating Systems," on page 104

Open a Virtual Machine Console

Accessing your virtual machine console allows you to view information about a virtual machine, work with the guest operating system, and perform operations that affect the guest operating system.

You might be required to install VMware Remote Console Plug-In. Click **Install** in the dialog box that appears.

Prerequisites

The virtual machine is powered on.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **VMs**.

3 Select a virtual machine, right-click, and select **Popout Console**.

If you close or refresh a virtual machine console while you have one or more client devices connected, those devices are disconnected.

Power On a Virtual Machine

Powering on a virtual machine is the equivalent of powering on a physical machine.

You cannot power on a virtual machine that has guest customization enabled unless the virtual machine has a current version of VMware Tools installed.

Prerequisites

A virtual machine that is powered off.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **VMs**.

3 Select a virtual machine, right-click, and select **Power On**.

Power Off a Virtual Machine

Powering off a virtual machine is the equivalent of powering off a physical machine.

Prerequisites

A virtual machine that is powered on.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **VMs**.

3 Select a virtual machine, right-click, and select **Power Off**.

Reset a vApp or Virtual Machine

Resetting a virtual machine clears state (memory, cache, and so on), but the vApps and virtual machines continue to run.

Prerequisites

Your vApp is started and virtual machine is powered on.

Procedure

1 Click **My Cloud**.

2 In the left pane, select **vApps** or **VMs**.

3 Select a vApp or virtual machine, right-click, and select **Reset**.

Suspend a Virtual Machine

Suspending a virtual machine preserves its current state.

Prerequisites

A virtual machine that is powered on.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **VMs**.

3 Select a virtual machine, right-click, and select **Suspend**.

4 Click **Yes**.

Resume a Suspended Virtual Machine

You can resume a suspended virtual machine to power it on and return it to the state it was in when you suspended it.

Prerequisites

A suspended virtual machine.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **VMs**.

3 Select a virtual machine, right-click, and select **Resume**.

Discard the Suspended State of a Virtual Machine

If a virtual machine is in a suspended state, you can discard this state, for example, to free storage space.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **VMs**.

3 Select a virtual machine, right-click, and select **Discard Suspended State**.

4 Click **Yes**.

Insert a CD/DVD

You can access CD/DVD images from catalogs to use in a virtual machine guest operating system. You can install operating systems, applications, drivers, and so on.

Prerequisites

You have access to a catalog with media files.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **VMs**.

3 In the right pane, select a virtual machine, right-click, and select **Insert CD/DVD from Catalog**.

4 Select a media file and click **Insert**.

The selected CD or DVD is inserted.

Eject a CD/DVD

After you have finished using a CD or DVD in your virtual machine you can eject it.

Procedure

1 Click **My Cloud**.

2 In the left pane, select **VMs**.

3 Select a virtual machine, right-click, and select **Eject CD/DVD**.

The media file is removed from the virtual machine.

Insert a Floppy

You can access floppy disk images from catalogs to use in a guest operating system. When you insert a floppy disk, you can install operating systems, applications, drivers, and so on.

Prerequisites

You have media files in your catalog.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **VMs**.

3 Select a virtual machine, right-click, and select **Insert Floppy from Catalog**.

4 Using the drop-down menu, select a floppy disk image or select one from the list and click **Insert**.

The selected floppy disk is inserted.

Eject a Floppy

After you have finished using a floppy disk in your virtual machine you can eject it.

Procedure

1 Click **My Cloud**.

2 In the left pane, select **VMs**.

3 Select a virtual machine, right-click, and select **Eject Floppy**.

The floppy disk is removed from the virtual machine.

Upgrade the Virtual Hardware Version for a Virtual Machine

You can upgrade the virtual hardware version for a virtual machine. Higher virtual hardware versions support more features.

vCloud Director supports hardware version 4, hardware version 7, and hardware version 8 virtual machines depending on the resources backing the organization's virtual datacenters.

You cannot downgrade the hardware version of a virtual machine.

Prerequisites

The virtual machine must be powered off and it must have the latest version of VMware Tools installed.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **VMs**.

3 Select a virtual machine, right-click, and select **Upgrade Virtual Hardware Version**.

4 Click **Yes**.

Connect Remotely to a Virtual Machine

You can use the `Remote Desktop Connection` file to connect to a deployed virtual machine from your desktop.

Prerequisites

- The virtual machine must be powered on, running a Windows guest OS, and have **Remote Desktop** enabled in the guest OS.
- The virtual machine must have an IP assigned on its network that is accessible by the client.
- The RDP port 3389 must be open on the guest OS.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **VMs**.

3 Select a virtual machine, right-click, and select **Download Windows Remote Desktop Shortcut File**.

4 In the **Download RDP Shortcut File** dialog box, click **Yes**.

5 Navigate to the location where you want to save the file and click **Save**.

6 Double-click the file and select **Connect**.

Copy or Move a Virtual Machine to a vApp

You can copy or move a virtual machine to another vApp. When you copy a virtual machine, the original virtual machine remains in the source vApp. If you move a virtual machine, it is removed from the source vApp.

Prerequisites

The virtual machine must be powered off.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **VMs**.

3 Select a virtual machine, right-click, and select **Copy to** or **Move to**.

4 Follow the prompts to complete the wizard.

5 Click **Finish**.

Delete a Virtual Machine

You can delete a virtual machine from your organization.

Prerequisites

Your virtual machine must be powered off.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **VMs**.

3 Select a virtual machine, right-click, and select **Delete**.

4 Click **Yes**.

Modify Virtual Machine General Properties

You can review and modify the name, description, and other general properties of a virtual machine.

Prerequisites

The virtual machine must be powered off to modify some general properties.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **VMs**.

3 Select a virtual machine, right-click, and select **Properties**.

4 On the **General** tab, modify the properties and click **OK**.

Option	Description
Full name	The display name of the virtual machine in vCloud Director.
Computer name	The computer/host name set in the guest operating system that identifies the virtual machine on a network. This field is restricted to 15 characters because of a Windows OS limitation on computer names.
Description	An optional description of the virtual machines.
Operating System Family	Drop-down list containing supported operating system families.
Operating System	Drop-down list containing supported operating systems.
Virtual hardware version	The virtual hardware version of the virtual machine. Select the **Upgrade to** and select a hardware version to upgrade the virtual machine hardware.
Virtual CPU hot add	Select the check box to enable virtual CPU hot add. This allows you to add virtual CPUs to a powered on virtual machine. This feature is only supported on certain guest operating systems and virtual machine hardware versions.

Option	Description
Memory hot add	Select the check box to enable memory hot add. This allows you to add memory to a powered on virtual machine. This feature is only supported on certain guest operating systems and virtual machine hardware versions.
Synchronize time	Select the check box to enable time synchronization between the virtual machine guest operating system and the virtual datacenter in which it is running.

Modify Virtual Machine CPUs and Memory

You can modify the number of virtual CPUs and memory for a virtual machine.

The number of virtual CPUs and memory that a virtual machine supports depends on its virtual hardware version.

Table 9-1. Virtual Hardware Versions and CPU/Memory Support

Virtual Hardware Version	Maximum CPUs	Maximum Memory
HW4	4	64GB
HW7	8	255GB
HW8	32	1011GB

You must power off the virtual machine before adding CPUs or memory, unless the virtual machine supports memory hot add and virtual CPU hot add.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **VMs**.

3 Select a virtual machine, right-click, and select **Properties**.

4 On the **Hardware** tab, select the number of CPUs and total memory for the virtual machine.

5 Click **OK**.

Modify Virtual Machine OVF Environment Properties

If a virtual machine includes user-configurable OVF environment properties, you can review and modify those properties.

If the vApp containing the virtual machine includes a value for a user-configurable property of the same name, the virtual machine value takes precedence.

Prerequisites

The virtual machine is powered off and its OVF environment includes user-configurable properties.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **VMs**.

3 Select a virtual machine, right-click, and select **Properties**.

4 On the **Custom Properties** tab, modify the properties and click **OK**.

Configuring Virtual Machine Resource Allocation Settings

Reservation pool virtual datacenters support the ability to control resource allocation at the virtual machine level. Users with the necessary rights can customize the amount of resources that are allocated to their virtual machines.

Use the resource allocation settings (shares, reservation, and limit) to determine the amount of CPU, memory, and storage resources provided for a virtual machine. Users have several options for allocating resources.

- Ensure that a certain amount of memory for a virtual machine is provided by the virtual datacenter.
- Guarantee that a particular virtual machine is always allocated a higher percentage of the virtual datacenter resources than other virtual machines.
- Set an upper bound on the resources that can be allocated to a virtual machine.

Resource Allocation Shares

Shares specify the relative importance of a virtual machine within a vDC. If a virtual machine has twice as many shares of a resource as another virtual machine, it is entitled to consume twice as much of that resource when these two virtual machines are competing for resources.

Shares are typically specified as **High**, **Normal**, or **Low** and these values specify share values with a 4:2:1 ratio, respectively. You can also select **Custom** to assign a specific number of shares (which expresses a proportional weight) to each virtual machine.

When you assign shares to a virtual machine, you always specify the priority for that virtual machine relative to other powered-on virtual machines.

The following table shows the default CPU and memory share values for a virtual machine.

Table 9-2. Share Values

Setting	CPU share values	Memory share values
High	2000 shares per virtual CPU	20 shares per megabyte of configured virtual machine memory.
Normal	1000 shares per virtual CPU	10 shares per megabyte of configured virtual machine memory.
Low	500 shares per virtual CPU	5 shares per megabyte of configured virtual machine memory.

For example, a virtual machine with two virtual CPUs and 1GB RAM with CPU and memory shares set to **Normal** has 2x1000=2000 shares of CPU and 10x1024=10240 shares of memory.

The relative priority represented by each share changes when a new virtual machine is powered on. This affects all virtual machines in the same vDC.

Resource Allocation Reservation

A reservation specifies the guaranteed minimum allocation for a virtual machine.

vCloud Director allows you to power on a virtual machine only if there are enough unreserved resources to satisfy the reservation of the virtual machine. The vDC guarantees that amount even when its resources are heavily loaded. The reservation is expressed in concrete units (megahertz or megabytes).

For example, assume you have 2GHz available and specify a reservation of 1GHz for VM1 and 1GHz for VM2. Now each virtual machine is guaranteed to get 1GHz if it needs it. However, if VM1 is using only 500MHz, VM2 can use 1.5GHz.

Reservation defaults to 0. You can specify a reservation if you need to guarantee that the minimum required amounts of CPU or memory are always available for the virtual machine.

Resource Allocation Limit

Limit specifies an upper bound for CPU and memory resources that can be allocated to a virtual machine.

A vDC can allocate more than the reservation to a virtual machine, but never allocates more than the limit, even if there are unused resources on the system. The limit is expressed in concrete units (megahertz or megabytes).

CPU and memory resource limits default to unlimited. When the memory limit is unlimited, the amount of memory configured for the virtual machine when it was created becomes its effective limit in most cases.

In most cases, it is not necessary to specify a limit. You might waste idle resources if you specify a limit. The system does not allow a virtual machine to use more resources than the limit, even when the system is underutilized and idle resources are available. Specify a limit only if you have good reasons for doing so.

Configure Virtual Machine Resource Allocation Settings

You can configure the resource allocation settings (shares, reservation, and limit) to determine the amount of CPU, memory, and storage resources provided for a virtual machine.

For more information about shares, reservations, and limits, see "Resource Allocation Shares," on page 90, "Resource Allocation Reservation," on page 90, and "Resource Allocation Limit," on page 91.

Prerequisites

A reservation pool vDC.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **VMs**.

3 Select a virtual machine, right-click, and select **Properties**.

4 Click the **Resource Allocation** tab and set the priority, reservation, and limit for CPU and memory.

5 Click **OK**.

Modifying Virtual Machine Hard Disks

You can add hard disks, edit hard disks, and delete hard disk from a virtual machine.

Add a Virtual Machine Hard Disk

You can add a virtual hard disk to a virtual machine.

The virtual machine is powered off.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **VMs**.

3 Select a virtual machine, right-click, and select **Properties**.

4 On the **Hardware** tab, click **Add** in the Hard Disks section.

5 Select the disk size, bus type, bus number, and unit number and click **OK**.

What to do next

Power on the virtual machine and use the guest operating system tools to partition and format the new disk.

Edit a Virtual Machine Hard Disk

You can modify the bus number and unit number of a virtual machine hard disk.

The virtual machine is powered off.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **VMs**.

3 Select a virtual machine, right-click, and select **Properties**.

4 On the **Hardware** tab, select a new bus number or unit number in the Hard Disks section and click **OK**.

Delete a Virtual Machine Hard Disk

You can delete a virtual machine hard disk.

The virtual machine is powered off.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **VMs**.

3 Select a virtual machine, right-click, and select **Properties**.

4 On the **Hardware** tab, click **Delete** in the Hard Disks section and click **Yes**.

5 Click **OK**.

Modifying Virtual Machine Network Interfaces

You can modify virtual machine network settings, reset a MAC address, add a network interface, and delete a network interface.

Virtual machine version 4 supports up to four NICs, and virtual machine version 7 and 8 support up to ten NICs.

Edit Network Interface Settings

You can disconnect a virtual machine NIC, change the network to which a NIC connects, specify a primary NIC, and change the IP addressing mode for a NIC.

Prerequisites

The virtual machine is powered off.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **VMs**.

3 Select a virtual machine, right-click, and select **Properties**.

4 In the **NICs** section on the **Hardware** tab, specify the network settings for each NIC.

Option	Action
Connected	Deselect the check box to disconnect a NIC.
Network	Select a network from the drop-down menu.
Primary NIC	Select a primary NIC. The primary NIC setting determines the default and only gateway for the virtual machine.The virtual machine can use any NIC to connect to other machines that are directly connected to the same network as the NIC, but it can only use the primary NIC to connect to machines on networks that require a gateway connection.
IP Mode	Select an IP mode. ■ **Static - IP Pool** pulls IP addresses from the network's IP pool. ■ **Static - Manual** allows you to specify an IP address. ■ **DHCP** pulls IP addresses from a DHCP server.
IP Address	If you selected **Static - Manual**, type an IP address.

5 Click **OK**.

Reset a Network Interface MAC Address

You can reset a network interface MAC address if, for example, you have a MAC address conflict or if you need to discard saved state quickly and easily.

Prerequisites

The virtual machine is powered off.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **VMs**.

3 Select a virtual machine, right-click, and select **Properties**.

4 Click the **Hardware** tab.

5 In the **NICs** section, click the **MAC Address**drop-down menu and select **Reset**.

6 Click **OK**.

Add a Network Interface

You can add one or more virtual NICs to a virtual machine.

Virtual machine version 4 supports up to four NICs, and virtual machine version 7 and 8 support up to ten NICs.

For information about supported network adapter types, see http://kb.vmware.com/kb/1001805.

Prerequisites

The virtual machine is powered off.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **VMs**.

3 Select a virtual machine, right-click, and select **Properties**.

4 In the **NICs** section on the **Hardware** tab, click **Add**.

5 (Optional) Modify the NIC settings.

6 Click **OK**.

Remove a Network Interface

You can remove NICs from a virtual machines.

Prerequisites

The virtual machine is powered off.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **VMs**.

3 Select a virtual machine, right-click, and select **Properties**.

4 In the **NICs** section on the **Hardware** tab, click **Delete**.

5 Click **OK**.

Installing VMware Tools

VMware Tools supports shared folders and cut and paste operations between the guest operating system and the machine from which you launch the vCloud Director Web console.

vCloud Director depends on VMware Tools to customize the guest OS. Using VMware Tools, you can move the pointer in and out of the virtual machine console window.

A virtual machine must be powered on to install VMware Tools.

Install VMware Tools in a New Virtual Machine with No Guest Operating System

If your newly created virtual machine has no guest operating system, you must install it before you can install VMware Tools.

You must be at least a vApp User.

Prerequisites

You have created a vApp in which you have a blank virtual machine.

Procedure

1 Click **My Cloud**.

2 In the left pane, select**vApps > Open**.

3 On the **Virtual Machines**tab, select a virtual machine, right-click, and select **Power On**.

4 Log into the virtual machine console and install the guest operating system.

5 Install **VMware Tools**.

6 Power off the virtual machine.

7 Select the virtual machine, right-click and select **Properties**.

8 On the **Guest OS Customization** tab, select the **Enable guest customization** check box.

9 Power the virtual machine on.

The guest OS in your newly created virtual machine has been customized.

Installing VMware Tools in a vApp

When you install VMware Tools in a virtual machine in a vApp, you need to understand the process.

You can trigger VMware Tools installation on a powered on guest virtual machine in a vApp by selecting the virtual machine, right-click, and selecting **Install VMware Tools**. Open the virtual machine console to continue with the installation. For information on installing in a variety of guest OSs, see Table 9-3.

Table 9-3. Installing VMware Tools

Action	Reference
To install on a Windows Guest	"Install VMware Tools on a Windows Guest," on page 101
To install on a Linux Guest	■ "Install VMware Tools on a Linux Guest in X with the RPM Installer," on page 102 ■ "Install VMware Tools on a Linux Guest with the Tar Installer or RPM Installer," on page 102
To install on a Solaris Guest	"Install VMware Tools on a Solaris Guest," on page 103

If the settings on a guest virtual machine are not in synch with vCloud Director or an attempt to perform guest customization has failed, you can select the virtual machine, right-click, and select **Power on and Force re-customization**.

When you select **Add to My Cloud** or **Add from Catalog** on a vApp template, these are the available options on the vApp template **Properties** page.

- **Make identical copy**
- **Customize VM Settings**

The vApp template is added and saved as a vApp in your organization. These options are not used when you use a virtual machine, when you create a new vApp, or add a new virtual machine.

Install VMware Tools in a Virtual Machine in a vApp

vApp deployment can fail if VMware Tools are not installed on the virtual machines in the vApp.

Prerequisites

You must stop the vApp.

Procedure

1 Disable Guest Customization on page 96

To install VMware Tools in a virtual machine in a vApp, you must disable guest customization.

2 Start the vApp on page 96

After you install VMware Tools, you must start the vApp.

3 Install VMware Tools on page 96

You must install VMware Tools in your virtual machines to customize the guest operation system.

4 Stop the vApp on page 96

To enable guest customization on a virtual machine, you must stop the vApp.

5 Enable Guest Customization on page 97

After you install or upgrade VMware Tools in your virtual machines, you must enable guest customization.

6 Start the vApp on page 97

After you install VMware Tools, you must start the vApp.

Disable Guest Customization

To install VMware Tools in a virtual machine in a vApp, you must disable guest customization.

Procedure

1 Click **My Cloud**.

2 In the left pane, select **VMs**.

3 Select a virtual machine, right-click, and select **Properties**.

4 On the **Guest OS Customization** tab, deselect the **Enable guest customization** check box.

Start the vApp

After you install VMware Tools, you must start the vApp.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **vApps**.

The virtual machines in the vApp will customize when you power on. The guest OS will be rebooted during customization if necessary.

3 Select the vApp, right click, and select **Start**.

Install VMware Tools

You must install VMware Tools in your virtual machines to customize the guest operation system.

You are at least a vApp User.

Prerequisites

Guest customization is disabled on the relevant virtual machines.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **vApps**.

3 Select a vApp, right-click, and select **Open**.

4 On the **Virtual Machines** tab, select a virtual machine, right-click, and select **Power On**.

5 Select the virtual machine, right-click, and select **Install VMware Tools**.

VMware tools installation is triggered or Tools CD is mounted. You need to open the virtual machine console to complete the installation.

VMware Tools is installed.

Stop the vApp

To enable guest customization on a virtual machine, you must stop the vApp.

You are at least a vApp User.

Prerequisites

Your vApp is started.

Procedure

1 Click **My Cloud**.

2 Power off your virtual machines.

3 Select a vApp, right-click, and select **Stop**.

The vApp is stopped.

Enable Guest Customization

After you install or upgrade VMware Tools in your virtual machines, you must enable guest customization.

Procedure

1 On the **Guest OS Customization** tab, select the **Enable guest customization** check box.

2 Select the other check boxes in the dialog box as relevant.

Start the vApp

After you install VMware Tools, you must start the vApp.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **vApps**.

The virtual machines in the vApp will customize when you power on. The guest OS will be rebooted during customization if necessary.

3 Select the vApp, right click, and select **Start**.

Install VMware Tools in a vApp Template

You can install VMware Tools on a virtual machine for which guest customization is enabled.

Prerequisites

Guest customization is enabled on the virtual machine's **Properties** page.

Procedure

1 Save the vApp Template as a vApp on page 98

To install VMware Tools in a vApp, you must save it as a vApp.

2 Disable Guest Customization on page 98

Before you can install VMware Tools on a virtual machine, you must disable guest customization.

3 Install VMware Tools on page 98

You must install VMware Tools in your virtual machines to customize the guest operation system.

4 Enable Guest Customization on page 99

After you install or upgrade VMware Tools in your virtual machines, you must enable guest customization.

5 Add vApp to Catalog on page 99

After you install or upgrade VMware Tools, you can add the updated vApp to your catalog.

Save the vApp Template as a vApp

To install VMware Tools in a vApp, you must save it as a vApp.

Procedure

1 Click **Catalogs**.

2 On the **vApp Templates** tab, select a vApp template, right-click, and select **Properties**.

3 Select **Make Identical Copy**.

4 Select the vApp template, right-click, and select **Add to My Cloud**.

The vApp template has been saved as a vApp.

What to do next

You need to install VMware Tools.

Disable Guest Customization

Before you can install VMware Tools on a virtual machine, you must disable guest customization.

Procedure

1 On the**vApps** page, select a vApp, right-click, and select **Open**.

2 Select **My Cloud** > **vApps**.

3 In a vApp, select a virtual machine, right-click, and select **Open**.

4 On the **Guest OS Customization** tab, deselect the **Enable guest customization** and other check boxes as desired.

5 Select a virtual machine, right-click, and select **Properties**

6 On the **Guest OS Customization** tab, deselect the **Enable guest customization** check box.

7 Select the vApp, right-click, and select **Start**.

Install VMware Tools

You must install VMware Tools in your virtual machines to customize the guest operation system.

You are at least a vApp User.

Prerequisites

Guest customization is disabled on the relevant virtual machines.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **vApps**.

3 Select a vApp, right-click, and select **Open**.

4 On the **Virtual Machines** tab, select a virtual machine, right-click, and select **Power On**.

5 Select the virtual machine, right-click, and select **Install VMware Tools**.

VMware tools installation is triggered or Tools CD is mounted. You need to open the virtual machine console to complete the installation.

VMware Tools is installed.

Enable Guest Customization

After you install or upgrade VMware Tools in your virtual machines, you must enable guest customization.

Procedure

1 On the **Guest OS Customization** tab, select the **Enable guest customization** check box.

2 Select the other check boxes in the dialog box as relevant.

Add vApp to Catalog

After you install or upgrade VMware Tools, you can add the updated vApp to your catalog.

Procedure

1 Select a vApp, right-click, and select **Stop**.

2 Select the vApp, right-click, and select **Add vApp to Catalog**.

3 Select the vApp template, right-click, and select **Properties**.

4 Select **Customize VM Settings** or **Make Identical Copy**.

5 (Optional) Delete the previous version of the vApp template, if necessary.

Install VMware Tools With Guest Customization Disabled

You can install VMware Tools in a vApp template when guest customization is disabled.

Prerequisites

Guest customization is disabled on the virtual machine **Properties** page.

Procedure

1 Save the vApp Template as a vApp on page 99

To install VMware Tools in a vApp, you must save it as a vApp.

2 Install or Upgrade VMware Tools on page 100

You can either install VMware Tools or upgrade the current version in your virtual machine.

3 Enable Guest Customization on page 100

After you install or upgrade VMware Tools in your virtual machines, you must enable guest customization.

4 Add vApp to Catalog on page 100

After you install or upgrade VMware Tools, you can add the updated vApp to your catalog.

Save the vApp Template as a vApp

To install VMware Tools in a vApp, you must save it as a vApp.

Procedure

1 Click **Catalogs**.

2 On the **vApp Templates** tab, select a vApp template, right-click, and select **Properties**.

3 Select **Make Identical Copy**.

4 Select the vApp template, right-click, and select **Add to My Cloud**.

The vApp template has been saved as a vApp.

What to do next

You need to install VMware Tools.

Install or Upgrade VMware Tools

You can either install VMware Tools or upgrade the current version in your virtual machine.

Procedure

1 Click **My Cloud**.

2 In the left pane, select **vApps**.

3 On the **vApps** page, select a vApp, right-click, and select **Open**.

4 Select a virtual machine, right-click, and select **Properties**.

5 In the **Guest OS Customization** tab, deselect the **Enable guest customization** and other check boxes as desired.

6 Right-click the virtual machine and select **Install VMware Tools**.

Enable Guest Customization

After you install or upgrade VMware Tools in your virtual machines, you must enable guest customization.

Procedure

1 On the **Guest OS Customization** tab, select the **Enable guest customization** check box.

2 Select the other check boxes in the dialog box as relevant.

Add vApp to Catalog

After you install or upgrade VMware Tools, you can add the updated vApp to your catalog.

Procedure

1 Select a vApp, right-click, and select **Stop**.

2 Select the vApp, right-click, and select **Add vApp to Catalog**.

3 Select the vApp template, right-click, and select **Properties**.

4 Select **Customize VM Settings** or **Make Identical Copy**.

5 (Optional) Delete the previous version of the vApp template, if necessary.

Upgrade VMware Tools

If the version of VMware Tools is earlier than 7299 in a virtual machine in your vApp, you must upgrade it.

Upgrading VMware Tools might involve uninstalling your existing VMware Tools versions and installing a new one from a CD mounted in the operating system. This process can also be done automatically.

Prerequisites

You must stop the vApp.

Procedure

1 Install a New Version of VMware Tools on page 101

After you disable guest customization, you can upgrade VMware Tools.

2 Enable Guest Customization on page 101

After you install or upgrade VMware Tools in your virtual machines, you must enable guest customization.

3 Start the vApp on page 101

After you install VMware Tools, you must start the vApp.

Install a New Version of VMware Tools

After you disable guest customization, you can upgrade VMware Tools.

Procedure

1 Select the vApp, right-click, and select **Start**.

2 Select the virtual machine, right-click, and select **Install VMware Tools**.

The process is different based on the operating system.

Enable Guest Customization

After you install or upgrade VMware Tools in your virtual machines, you must enable guest customization.

Procedure

1 On the **Guest OS Customization** tab, select the **Enable guest customization** check box.

2 Select the other check boxes in the dialog box as relevant.

Start the vApp

After you install VMware Tools, you must start the vApp.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **vApps**.

The virtual machines in the vApp will customize when you power on. The guest OS will be rebooted during customization if necessary.

3 Select the vApp, right click, and select **Start**.

Install VMware Tools on a Windows Guest

vCloud Director uses VMware Tools to customize the Windows guest operating system.

Prerequisites

- The VMware Remote Console plug-in is installed.
- Your virtual machine is powered off.
- You have disabled the option to install VMware Tools on a powered off virtual machine.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **VMs**.

3 Select a virtual machine, right-click, and select **Install VMware Tools**.

4 Follow the prompts to complete the installation wizard.

5 Click **Finish**.

6 Restart your virtual machine.

Install VMware Tools on a Linux Guest in X with the RPM Installer

You can use an RPM installer to install VMware Tools on a Linux guest operating system.

Prerequisites

The VMware Remote Console plug-in is installed.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **VMs**.

3 Select a Linux virtual machine, right-click, and select **Popout Console**.

4 In the guest operating system, start the RPM installer.

- Double-click the VMware Tools CD icon on your desktop and double-click the RPM installer in the root of the CD-ROM.
- Double-click the RPM installer in the file manager window.

5 Type the root password and click **OK**.

6 Click **Continue** when the package is ready.

When VMware Tools is installed, no confirmation or **Finish** button appears.

7 In an X terminal, as root, run the `vmware-config-tools.pl` script to configure VMware Tools.

8 Press Enter to accept the default value.

9 After the upgrade is complete, enter **`/etc/init.d/network`** to restart the network.

10 Type **`exit`**.

11 To start the VMware Tools control panel, enter **`vmware-toolbox &`**.

Install VMware Tools on a Linux Guest with the Tar Installer or RPM Installer

You can use a Tar command or RPM installer to install VMware tools on a Linux guest OS with a Tar or RPM.

Prerequisites

- The VMware Remote Console plug-in is installed.
- The virtual machine is powered on.
- With an existing installation, delete the **`vmware-tools-distrib`** directory before you install. The location of this directory depends on where you placed it during the previous installation (such as, **`tmp/vmware-tools-distrib`**).

Procedure

1 Click **My Cloud**.

2 In the left pane, click **VMs**.

3 Select a Linux virtual machine, right-click, and select **Install VMware Tools**.

4 Right-click the virtual machine again and click **Popout Console**.

5 In the guest operating system, log in as root (`su–`), mount the VMware Tools virtual CD-ROM image, and change to a working directory (for example, **`/tmp`**.

Some Linux distributions automatically mount CD-ROMs. If your distribution uses automounting, do not use the mount and unmount commands. You still must untar the VMware Tools installer to `/tmp`. Some Linux distributions use different device names or organize the `/dev` directory differently. If your CD-ROM drive is not `/dev/cdrom`, or if the mount point for a CD-ROM is not `/mnt/cdrom`, modify these commands to reflect the conventions used by your distribution.

```
mount /dev/cdrom /mnt/cdrom
cd /tmp
```

6 Uncompress the installer and unmount the CD-ROM image.

If you install an RPM installation over a tar installation, or the reverse, the installer detects the previous installation and must convert the installer database format before continuing.

Option	Action
In the tar installer	At the command prompt, type **`tar zxpf /mnt/cdrom/VMwareTools–8.5.1–<xxxxxx>.tar.gz`** **`unmount /dev/cdrom`** where <xxxxxx> is the build or revision number of the release.
In the RPM installer	At the command prompt, type **`tar zxpf /mnt/cdrom/VMwareTools–8.5.1–<xxxxxx>.i386.gz`** **`unmount /dev/cdrom`** where <xxxxxx> is the build/revision number of the release.

7 Run the installer.

Option	Action
In the tar installer	Type **`cd vmware–tools–distrib./vmware–install.pl`**. Press Enter to accept the default values.
In the RPM installer	Configure VMware Tools, type **`vmware–config–tools.pl`** Press Enter to accept the default values.

8 After the upgrade is complete, restart the network by running **`/etc/init.d/network restart`**.

9 Type **`exit`**.

10 Start your graphical environment.

11 In an X terminal, run **`vmware–toolbox &`**.

Install VMware Tools on a Solaris Guest

You can install VMware Tools on a Solaris guest OS.

Prerequisites

The VMware Remote Console plug-in is installed.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **VMs**.

3 Select a Solaris virtual machine, right click, and select **Install VMware Tools**.

4 Click **Popout Console**.

5 In the virtual machine, log in as root and, if necessary, mount the VMware Tools virtual CD-ROM image.

The Solaris volume manager vold mounts the CD-ROM under `/cdrom/vmwaretools`.

6 If the CD-ROM is not mounted, restart the volume manager by running these commands.

- `/etc/init.d/volmgt stop`
- `/etc/init.d/volmgt start`

7 After the CD-ROM is mounted, change to a working directory, for example, `/tmp` and extract VMware Tools.

- `cd /tmp`
- `gunzip -c /cdrom/vmwaretools/vmware-solaris-tools.tar.gz | tar xf-`

8 Run the VMware Tools tar installer.

- `cd vmware-tools-distrib`
- `./vmware-install.pl`

9 Press Enter to accept the default value.

10 Type **`exit`**.

11 Start your graphical environment.

12 In an X terminal, enter **`vmware-toolbox &`**.

Guest Operating Systems

A guest operating system is an operating system that runs inside a virtual machine. You can install a guest operating system in a virtual machine and control guest operating system customization for virtual machines created from vApp templates.

In "Guest Operating System Support," on page 111, you can see a list of the supported guest operating systems and whether customization is automatic or manual.

Install a Guest Operating System

With a guest OS you can manage virtual machines that are based on the available operating systems.

Prerequisites

The appropriate media file must be in your catalog.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **VMs**.

3 Select a virtual machine, right-click, and select **Insert CD/DVD**.

4 Select an available media file in the top panel or select one and add it to your vDC in the bottom panel.

5 Click **OK**.

6 Point to the virtual machine name and press Ctrl+Alt+Del to boot from the ISO image and start the operating system installer.

7 In the virtual machine console, type the required information to complete the installation.

8 Click **Finish**.

Customizing Your Guest Operating System

When you customize your guest OS you can set up a virtual machine with the operating system that you want.

vCloud Director can customize the network settings of the guest operating system of a virtual machine created from a vApp template. When you customize your guest operating system, you can create and deploy multiple unique virtual machines based on the same vApp template without machine name or network conflicts.

When you configure a vApp template with the prerequisites for guest customization and add a virtual machine to a vApp based on that template, vCloud Director creates a package with guest customization tools. When you deploy and power on the virtual machine for the first time, vCloud Director copies the package, runs the tools, and deletes the package from the virtual machine.

Understanding Guest Customization

When you customize your guest operating system, there are some settings and options you should know about.

Enable Guest Customization Check Box

This check box is found on the **Guest OS customization** tab on the virtual machine **Properties** page. The goal of guest customization is to configure based on the options selected in the **Properties** page. If this check box is selected, guest customization and re-customization is performed when required.

This process is required for all guest customization features, such as the computer name, network settings, setting and expiring the administrator/root password, SID change for Windows Operating systems, and so on, to work. This option should be selected for **Power on and Force re-customization** to work.

If the check box is selected, and the virtual machine's configuration parameters in vCloud Director are out of synch with the settings in the guest OS, the **Profile** tab on the virtual machines **Properties** page displays that the settings out of synch with the guest OS and the virtual machine needs guest customization.

Guest customization Behavior for vApps and Virtual Machines

The check boxes are deselected.

- **Enable guest customization**
- In Windows guest OSs, **Change SID**
- **Password reset**

If you want to perform customization (or you made changes to network settings that need to be reflected in the guest OS), you can select the **Enable guest customization**check box and set the options on the **Guest OS Customization** tab of the virtual machine **Properties** page. When virtual machines from vApp templates are used to create a new vApp and then add a virtual machine, the vApp templates act as building blocks. When you add virtual machines from the catalog to a new vApp, the virtual machines are enabled for guest customization by default. When you save a vApp template from a catalog as a vApp, virtual machines are enabled for guest customization only if the **Enable guest customization** check box is selected.

These are the default values of guest customization settings:

- The **Enable guest customization** check box is the same as the source virtual machine in your Catalog.
- For Windows guest virtual machines, **Change SID** is the same as the source virtual machine in your catalog.
- The password reset setting is same as the source virtual machine in your catalog.

You can deselect the **Enable guest customization** check box if required before you start the VApp.

If blank virtual machines, which are pending guest OS installation, are added to a vApp, the **Enable guest customization** check box is deselected by default because these virtual machines are not yet ready for customization .

After you install the guest OS and VMware Tools, you can power off the virtual machines, stop vApp, and select the **Enable guest customization** check box and start the vApp and virtual machines to perform guest customization.

If the virtual machine name and network settings are updated on a virtual machine that has been customized, the next time you power on the virtual machine, it is re-customized, which resynchronizes the guest virtual machine with vCloud Director

Customizing a Guest OS When Saving a vApp Template as a vApp

Before you customize a guest OS in a vApp template, you need to understand the settings you need to make.

On the **vApp Templates Properties**page, if you select **Customize VM Settings** for the **When creating a vApp from this template** option, and you select **Add to My Cloud** or **Add from Catalog**, the **Enable guest customization** check box is selected by default and guest customization is performed.

These are the default values of guest customization settings.

- The **Enable guest customization** check box is selected.
- For Windows guest VMs, the **Change SID** option is the same as the source virtual machine in your catalog.
- Password reset setting is the same as the source virtual machine in your catalog.

If you select **Make Identical Copy** on the vApp template **Properties** page, and select **Add to My Cloud**, the settings in the vApp Template are applied to the new vApp, regardless of whether customization is enabled.

These are the default values of guest customization settings.

- The **Enable guest customization** check box is deselected.
- In Windows guest virtual machines, the **Change SID**check box is deselected.
- The password reset setting is deselected.

After you import or upload to a catalog, these are the default values.

- The **Customize VM Settings** check box is selected in the vApp
- The **Enable guest customization** check box is selected for the virtual machines.
- For Windows guest VMs, the **Change SID** check box is selected for the virtual machines.
- The Password reset setting is selected by default for the virtual machines.

If you are a vApp template owner and you import or upload to a catalog, you must check the VMware Tools version installed on the virtual machines in the vApp. To do this, select the vApp template, right-click, and select **Open**. Tools version is shown in the **VMware Tools** column. If you select **Customize VM Settings**, VMware Tools should be installed on all virtual machines. See "Installing VMware Tools," on page 94 for more information.

Enable or Disable Guest Customization

You can disable guest customization for a virtual machine or a vApp template.

Prerequisites

VMware Tools is installed.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **vApp** or **VMs**.

3 Select a vApp or virtual machine, right-click, and select **Properties**.

4 On the **Guest OS Customization** tab, select or deselect the **Enable guest customization** check box.

5 Click **OK**.

Guest customization in the selected virtual machine is enabled or disabled.

Change Guest Customization Settings for Virtual Machines in a vApp Template

You can change the guest customize settings on virtual machines in a vApp template when the virtual machines are used as building blocks to create a new vApp.

Procedure

1 Click **Catalogs**.

2 On the **vApp Templates** tab, select a vApp template, right-click, and select **Add to My Cloud**.

The vApp template is saved as a vApp.

3 Select the vApp, right-click, and select **Open**.

4 On the **Virtual Machines** tab, select the virtual machine, right-click, and select **Properties**.

5 On the **Guest Customization OS** tab, select or deselect the **Enable guest customization** check box and click **OK**.

6 Select the vApp, right-click, and select **Add to Catalog**.

The vApp is saved as a vApp template in the selected catalog.

Power on and Force Recustomization of a Virtual Machine

If the settings on a guest virtual machine are not in synch with vCloud Director or an attempt to perform guest customization has failed, you can power on and force the recustomization of the virtual machine.

You are at least a vApp user.

NOTE If you select the **Change SID** check box, a SID change will occur on the guest virtual machine.

Procedure

1 Click **My Cloud**.

2 In **vApps**, select a vApp, right-click, and select **Open**.

3 On the **Virtual Machines** tab, select a virtual machine, right-click, and select **Power On and Force Recustomization**.

The virtual machine is now recustomized.

Customize Your Windows NT vApp Template

You must manually customize Windows NT vApp templates.

Prerequisites

- Ensure minimum NT SP6 is installed.
- Ensure VMware Tools are installed.

Procedure

1 Click **Catalogs**.

2 On the **vApp Templates** tab, select a vApp template.

3 Right-click and select **Add to My Cloud**.

4 In the guest OS, shut down the virtual machine.

5 Power off the virtual machine and ensure that the **Enable guest customization** check box is selected.

You must ensure that the virtual machine's NIC is not set to NONE network.

6 Start the vApp and power on the virtual machine.

The Customization CD is mounted automatically after the virtual machine powers on.

7 Right-click on the CD ROM and select **Auto play**.

This step copies the deployPkg.dll file to WINNT folder.

8 Power off the virtual machine.

9 Stop the vApp

10 Right-click the vApp template and select **Copy to Catalog**.

11 (Optional) Delete the original vApp template.

A script starts that copies files to the guest and prepares the virtual machine template for customization.

NOTE If you add new Windows NT vApp Templates, you need to complete only steps 4-7 once. You do not need to repeat these steps for additional virtual machines in the Catalog that result from copying these virtual machines.

Customize Your Solaris vApp Template

You must manually customize Solaris vApp templates.

Prerequisites

Ensure VMware Tools are installed.

Procedure

1 Click **Catalogs**.

2 Select a vApp Template, right-click, and select **Add to My Cloud**.

3 In the guest OS, shut down the virtual machine.

4 Ensure that the **Enable guest customization** check box is selected and power off the virtual machine.

5 Start the vApp and power on the virtual machine.

The Customization CD is mounted automatically after the virtual machine powers on.

6 Log in to the Solaris guest operating system.

7 In the terminal, run these case-sensitive commands:

```
/etc/init.d/volmgt stop
/etc/init.d/volmgt start
sh /cdrom/cdrom/customize-guest.sh install
eject cdrom
```

8 Run **`shutdown -y -g0 -i5`** to shut down the virtual machine from inside the guest operating system.

9 Stop the vApp.

10 Select the vApp template, right-click, and select **Copy to Catalog**.

11 (Optional) Delete the original vApp template.

A script starts that copies files to the guest and prepares the virtual machine template for customization.

NOTE If you add new Solaris vApp Templates, you need to complete only steps 4-7 once. You do not need to repeat these steps for additional virtual machines in the Catalog that result from copying these virtual machines.

Upload a Customization Script

You can upload a customization script to a virtual machine. The script runs before and after guest customization when you deploy a virtual machine based on a vApp template.

When you add a customization script to a virtual machine, the script is called:

- Only on initial customization and force recustomization.
- With the "precustomization" command line parameter before guest customization begins.
- With the "postcustomization" command line parameter after guest customization finishes.

The customization script cannot exceed 1500 characters.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **VMs**.

3 In the right pane, select a virtual machine, right-click, and select **Properties**.

4 On the **Guest OS Customization** tab, in the **Customization Script** panel, click **Browse**.

5 Navigate to your script file and click **Open**.

The file must be a batch file for Windows virtual machines and a shell script for Unix virtual machines.

6 Click **OK**.

Example: Customization Script Examples

A sample Windows batch file:

```
 @echo off
if "%1%" == "precustomization" (
echo Do precustomization tasks
) else if "%1%" == "postcustomization" (
echo Do postcustomization tasks
)
```

A sample Unix shell script:

```
 #!/bin/sh
if [ x$1 == x"precustomization" ]; then
echo Do Precustomization tasks
elif [ x$1 == x"postcustomization" ]; then
echo Do Postcustomization tasks
fi
```

Reset Your Virtual Machine's Password

You can reset your virtual machine's password.

Prerequisites

The virtual machine's guest OS is personalized, and your virtual machine is powered off.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **VMs**.

3 Select a virtual machine, right-click, and select **Properties**.

4 On the **Guest OS Customization** tab, select the **Enable guest customization** check box.

5 Select the **Allow local administrator password** check box.

6 To force all administrators to change the password at the initial log in, select the **Require administrator to change password on first login** check box.

Administrators must know the old password.

7 Determine whether you want an automatically generated password.

To use a specific password, select **Specify password** and type it.

8 (Optional) To use a specific password, select **Specify password** and type the password.

9 Click **OK**.

The password for your virtual machine is reset.

Domain Join Requirements for Windows

The automatic domain join feature has several requirements.

During the customization process, for Windows 2000, Microsoft Sysprep attempts to join the domain before network customization occurs. Therefore, the network properties of the source virtual machine are used to attempt to join the domain.

- If the source virtual machine network properties are such that the domain controller is not resolvable, domain join fails.
- If the source virtual machine was configured with a manually configured DNS, that DNS is contacted to resolve the domain controller even if the manually configured DNS is not on the network. In the case where the DNS cannot be found, domain join fails.
- If the source Windows 2000 virtual machine was configured with DHCP, the new network DHCP is used to attempt to resolve the domain controller. In this case, if the DNS that is configured to the DHCP can resolve the domain controller, domain join succeeds.

During customization for Microsoft Windows XP or later, Microsoft Sysprep resets the guest to configure the network settings to DHCP before attempting to join the domain, regardless of the source virtual machine or network settings. For automatic domain join to succeed, the DHCP on the network must be able to resolve the domain controller.

Join a Windows Guest Domain During Guest Operating System Personalization

A virtual machine can join a Windows guest domain when you personalize your guest OS.

Prerequisites

In a virtual machine's **Properties** page, the **Enable guest customization** check box is selected.

Procedure

1 Click **My Cloud**.

2 In the left pane, click **VMs**.

3 Select a virtual machine, right-click, and select **Properties**.

4 On the **Guest OS Customization** tab, select the **Enable this VM to join a domain** check box.

Override organization settings is selected by default.

5 Type a domain name, user name, and password.

6 Under **Customization Script**, click **Browse**, to upload a locally saved file.

7 Click **OK**.

The selected virtual machine joins the Windows guest domain.

Guest Operating System Support

vCloud Director supports a wide variety of 32-bit and 64-bit operating systems in its virtual machine templates and virtual machines. VMware recommends that you use version 7, but you can import version 4 virtual machines.

Microsoft Windows Guest Operating System Support, 32-Bit Support

For 32-bit Windows operating systems, Table 9-4 provides the virtual machine version and whether guest customization is automatic or manual on 32-bit Windows guest OS systems.

Table 9-4. Microsoft Windows Guest Operating System Support, 32-Bit Support

Operating System	Virtual Machine Version	Customization Support
Microsoft Windows 7	Version 7	Automatic
Microsoft Windows Server 2008	Version 7	Automatic
Microsoft Windows Server 2003, Enterprise Edition	Version 7	Automatic
Microsoft Windows Server 2003, Datacenter Edition	Version 7	Automatic
Microsoft Windows Server 2003, Standard Edition	Version 7	Automatic
Microsoft Windows Server 2003, Web Edition	Version 7	Automatic
Microsoft Windows Small Business Server 2003	Version 7	Automatic
Microsoft Windows Vista	Version 7	Automatic
Microsoft Windows XP Professional	Version 7	Automatic
Microsoft Windows 2000 Advanced Server	Version 7	Automatic
Microsoft Windows 2000 Server	Version 7	Automatic
Microsoft Windows 2000 Professional	Version 7	Automatic
Microsoft Windows NT4	Version 7	Manual

Microsoft Windows Guest Operating System Support, 64-Bit Support

For 64-bit Windows guest OS, Table 9-5 provides the virtual machine version and whether guest customization is automatic or manual.

Table 9-5. Microsoft Windows Guest Operating System Support, 64-Bit Support

Operating System	Virtual Machine Version	Customization Support
Microsoft Windows 7	Version 7	Automatic
Microsoft Server 2008 R2	Version 7	Automatic
Microsoft Windows Server 2008	Version 7	Automatic
Microsoft Windows Server 2003, Enterprise Edition	Version 7	Automatic
Microsoft Windows Server 2003, Datacenter Edition	Version 7	Automatic
Microsoft Windows Server 2003, Standard Edition	Version 7	Automatic
Microsoft Windows Vista	Version 7	Automatic
Microsoft Windows XP Professional	Version 7	Automatic

UNIX/Linux Guest Operating System Support, 32-Bit Support

For 32-bit UNIX and Linux guest OS, Table 9-6 provides the virtual machine version and whether guest customization is automatic or manual.

Table 9-6. UNIX/Linux Guest Operating System Support, 32-Bit Support

Operating System	Virtual Machine Version	Customization Support
Red Hat Enterprise Linux 5	Version 7	Automatic
Red Hat Enterprise Linux 4	Version 7	Automatic
Red Hat Enterprise Linux 3	Version 7	Automatic
Red Hat Enterprise Linux 2	Version 7	Automatic
SUSE Enterprise Linux 11	Version 7	Automatic
SUSE Enterprise Linux 10	Version 7	Automatic
SUSE Enterprise Linux 8/9	Version 7	Automatic
Open Enterprise Server	Version 7	Automatic
Asianux 3	Version 7	Automatic
Debian GNU/Linux 5	Version 7	Automatic
Debian GNU/Linux 4	Version 7	Automatic
Ubuntu Linux	Version 7	Automatic
Other 2.6x Linux	Version 7	Automatic
Other 2.4x Linux	Version 7	Automatic
Other Linux	Version 7	Automatic

UNIX/Linux Guest Operating System Support, 64-Bit Support

For 64-bit UNIX and Linux guest OS support, Table 9-7 provides the virtual machine version and whether guest customization is automatic or manual.

Table 9-7. UNIX/Linux Guest Operating System Support, 64-Bit Support

Operating System	Virtual Machine Version	Customization Support
Red Hat Enterprise Linux 5	Version 7	Automatic
Red Hat Enterprise Linux 4	Version 7	Automatic

Table 9-7. UNIX/Linux Guest Operating System Support, 64-Bit Support (Continued)

Operating System	Virtual Machine Version	Customization Support
Red Hat Enterprise Linux 3	Version 7	Automatic
SUSE Enterprise Linux 11	Version 7	Automatic
SUSE Enterprise Linux 10	Version 7	Automatic
SUSE Enterprise Linux 8/9	Version 7	Automatic
Asianux 3	Version 7	Automatic
Debian GNU/UNIX 5	Version 7	Automatic
Debian GNU/Linux 4	Version 7	Automatic
Ubuntu Linux	Version 7	Automatic
Other 2.6x Linux	Version 7	Automatic
Other 2.4x Linux	Version 7	Automatic
Other Linux	Version 7	Automatic

Solaris Guest Operating System, 32-Bit Support

For 32-bit Solaris guest OS, Table 9-8 provides the virtual machine version and whether guest customization is automatic or manual.

Table 9-8. Solaris Guest Operating System, 32-Bit Support

Operating System	Virtual Machine Version	Customization Support
Sun Solaris 10	Version 7	Manual
Sun Solaris 9 (experimental)	Version 7	Manual
Sun Solaris 8 (experimental)	Version 7	Manual

Solaris Guest Operating System, 64-Bit Support

For 64-bit Solaris guest OS, Table 9-9 provides the virtual machine version and whether guest customization is automatic or manual.

Table 9-9. Solaris Guest Operating System, 64-Bit Support

Operating System	Virtual Machine Version	Customization Support
Sun Solaris 10	Version 7	Manual

Unsupported Guest Operating Systems

For unsupported guest OSs, Table 9-10 provides the virtual machine version. Customization support is unavailable for these guest OSs.

Table 9-10. Unsupported Guest Operating Systems

Operating System	Virtual Machine Version	Customization Support
Microsoft Windows 98	Version 7	No
Microsoft Windows 95	Version 7	No
Microsoft Windows 3.1	Version 7	No
Novell NetWare 6.x	Version 7	No
Novell NetWare 5.1	Version 7	No

Table 9-10. Unsupported Guest Operating Systems (Continued)

Operating System	Virtual Machine Version	Customization Support
FreeBSD (32-bit)	Version 7	No
FreeBSD (64-bit)	Version 7	No
OS/2	Version 7	No
SCO OpenServer 5	Version 7	No
SCO UnixWare 7	Version 7	No
DOS	Version 7	No
Other (32-bit)	Version 7	No
Other (64-bit)	Version 7	No

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